Industrial Grade 2G 3G 4G Cellular Router

User Manual

H820 Series

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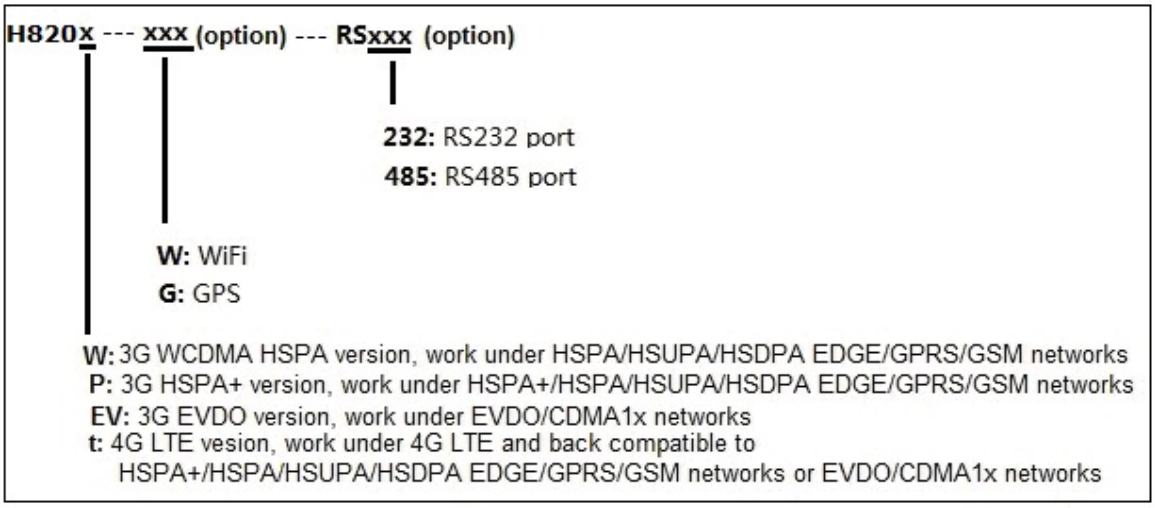
Chapter 1

1 Preparation job before configuration

1.1 Learn your router version and feature

1) H820 series contains different version and option feature. Please learn it before using it.
H820 series defines the model as follows,


H820x --- xxx (option) --- RSxxx (option)
232: RS232 port
485: RS485 port
W: WiFi
G: GPS
W: 3G WCDMA HSPA version, work under HSPA/HSUPA/HSDPA EDGE/GPRS/GSM networks
P: 3G HSPA+ version, work under HSPA+/HSPA/HSUPA/HSDPA EDGE/GPRS/GSM networks
EV: 3G EVDO version, work under EVDO/CDMA1x networks
t: 4G LTE vesion, work under 4G LTE and back compatible to
HSPA+/HSPA/HSUPA/HSDPA EDGE/GPRS/GSM networks or EVDO/CDMA1x networks

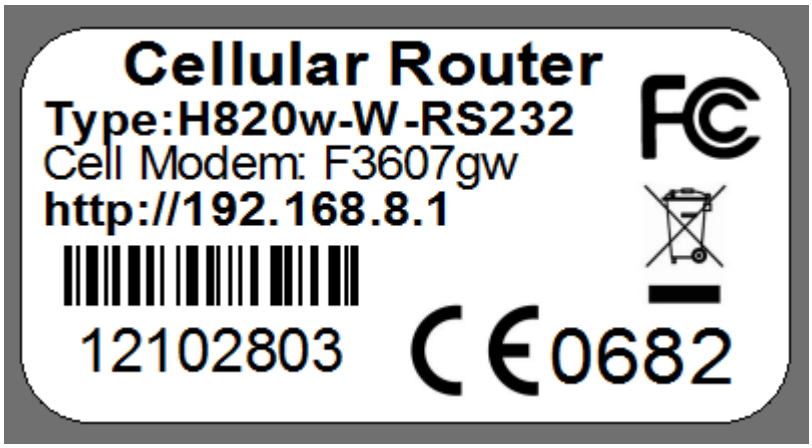
Notes: please be informed the following features are option. Please indicate with your orders.

1) cellular diversity receiving
2) WiFi Feature
3) GPS feature
4) Serial to cellular feature, RS232 or RS485 can choose one
5) Voice/SMS control
6) DC7V~50V
7) BGP, OSPF, RIP, etc.

2) Find the modem type info at the back cover of the router. This will be used while do configuration.

For example: the following label indicates the version, type and inside module modem.

The module modem name is “EM820w”, remember this and will select this module name while do configuration.



1.2 Prepare SIM Card and working condition

1. H820 router has different version. Study your router version before installation.
2. For GSM/GPRS/EDGE/HSDPA/HSUPA/HSPA/HSPA+/4G LTE version, please get a SIM card with data business.
3. For CDMA2000 EVDO/CDMA1x version, please get a UIM card with data business or inform us before order if the network uses non-ruim (nam-flashing).
4. Make sure the sim card or uim card is with enough data business and balance.
5. Make sure the signal is good enough where you test or install the router. Weak signal will make the router no work. If you find your signal strength is not good, please contact us for high gain antenna.
6. Different countries and carriers use different network band and frequency. E-Lins packs units with free world-wide-use antenna. It can work, but the data speed or signal may not be good at your sites. Please buy dedicated high gain antenna from your local suppliers or contact E-Lins to OEM/ODM the antenna.

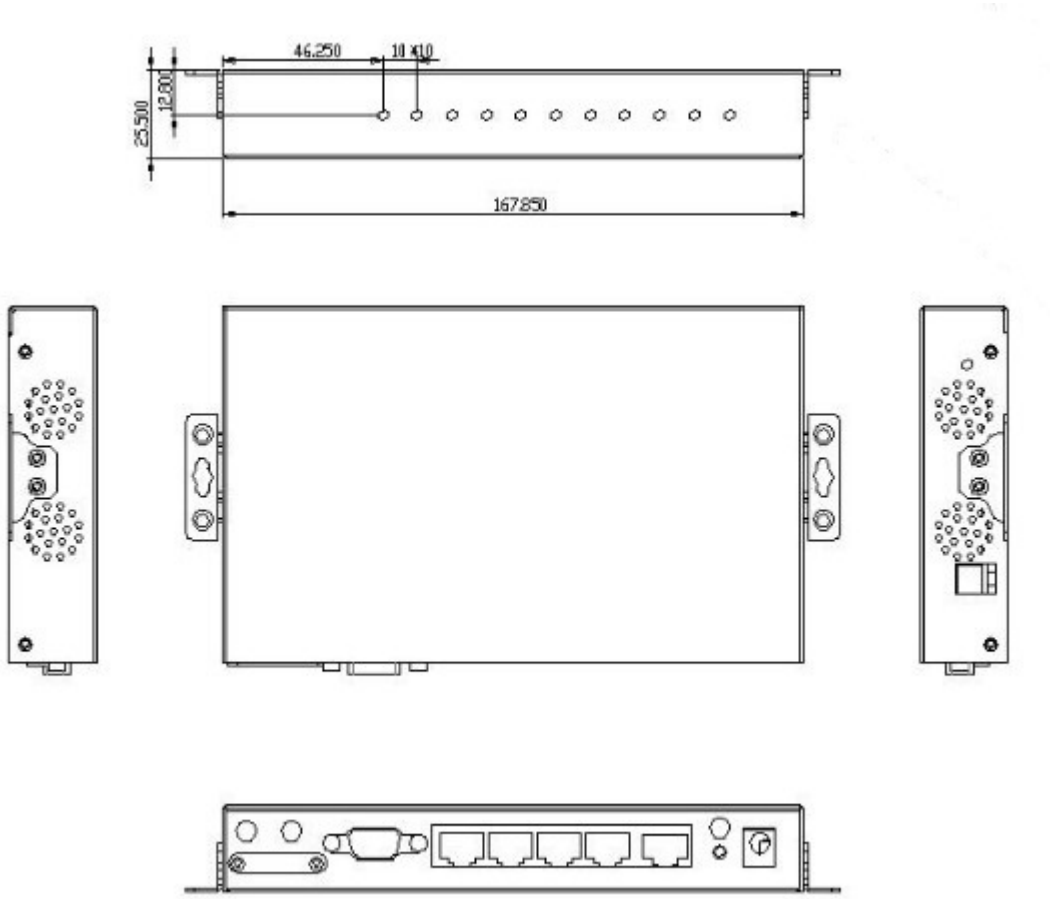
Chapter 2

2 Hardware Installation

This chapter mainly describes the appearance, model and function of H820 series and how to install and set the configurations.

1. *Overall Dimension*
2. *Accessories Description*
3. *Installment*

2.1 Overall Dimension



2.2 The Ports

Back Picture:

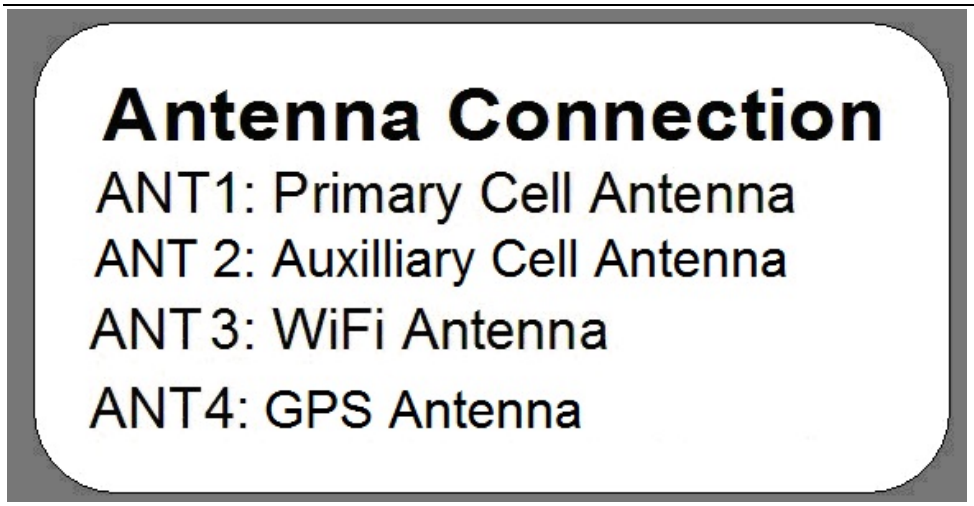
ANT1(CELL): for cellular
ANT2(AUX): for cellular diversity receiving MIMO. Notes: the old version ANT2 is for diversity or for GPS.
ANT3 (WiFi): for WiFi
ANT4 (GPS): for GPS. Notes: the old version has no ANT4.
SIM: for sim card
COM: DB9 for serial port.
LAN1~LAN4: LAN RJ45 Ethernet ports.
WAN: WAN RJ45 Ethernet ports.
RST: sys reset button
PWR: DC power socket. DC5~40V, DC5~50V option depends on the router version.

GND: DC wire ground
VCC: DC wire positive pole. DC5~40V, DC5~50V option depends on the router version
WPS: WPS button

Antenna Connection Table

Please refer the corresponding table to connect the antennas with your Router version. The table below is for standard version, connection may be different for special versions).

There is label printing on the back of the router case. Please refer it to connect the correct antennas.



Feature	ANT1 (CELL)	ANT2(AUX)	ANT3(WiFi)	ANT4(GPS)
Main Cellular	●			

Feature	ANT1 (CELL)	ANT2(AUX)	ANT3(WiFi)	ANT4(GPS)
Main Cellular	●			
Cellular Diversity Receiving		●		

Feature	ANT1 (CELL)	ANT2(AUX)	ANT3(WiFi)	ANT4(GPS)
Main Cellular	●			
WiFi			●	

Feature	ANT1 (CELL)	ANT2(AUX)	ANT3(WiFi)	ANT4(GPS)
Main Cellular	●			
GPS				●

Feature	ANT1 (CELL)	ANT2(AUX)	ANT3(WiFi)	ANT4(GPS)
Main Cellular	●			
WiFi			●	
GPS				●

Feature	ANT1 (CELL)	ANT2(AUX)	ANT3(WiFi)	ANT4(GPS)
Main Cellular	●			
Cellular Diversity Receiving		●		
WiFi			●	

Feature	ANT1 (CELL)	ANT2(AUX)	ANT3(WiFi)	ANT4(GPS)
Main Cellular	●			
Cellular Diversity Receiving		●		

GPS				●

Feature	ANT1 (CELL)	ANT2(AUX)	ANT3(WiFi)	ANT4(GPS)
Main Cellular	●			
Cellular Diversity Receiving		●		
WiFi			●	
GPS				●

Notes:
1) ● means connect related antenna.
2) For some H820 version, the case only has 3 ANT Connectors (ANT1, ANT2, ANT3). If the router has GPS feature, please connect the GPS antenna to ANT2.
3) Our packed antenna are free units. It should work in your country, however it may not work in your country with perfect signal and data speed. We highly recommend that customers can order the most suitable antenna in your local country for our routers and modems.

2.3 Installment

H820 series should be installed and configured properly before putting in service. The installation and configuration should be done or supervise by qualified engineer.
Attention:
Do not install H820 series or connect/disconnect its cable when it is power on.

2.4 SIM/UIM card installed

If your router has SIM/UIM card protector, please remove it, insert the sim card correctly, and fix the protector.
If your router has no SIM/UIM card protector, please insert the sim card correctly.
Attention: *SIM/UIM card does not reach the designated position, the equipment can not find a card, can't work normally, therefore inserted a try to check again for a SIM card is stuck fast.*

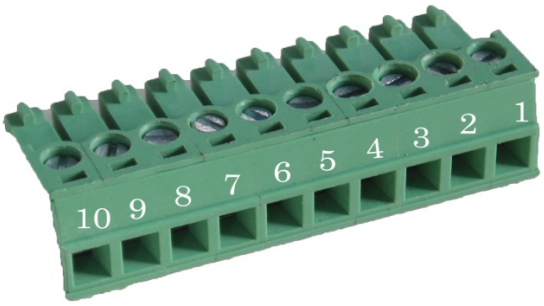
2.5 The installation of terminal blocks

This chapter is for version with terminal blocks only. Default, the H820 is with DB9 connector. Please use DB9 cable to connect H820 and the equipment directly.

The following is for version with terminal blocks only:

H820 uses pluggable terminals to connect the user's data and the power supply. Spacing: 3.81mm，10 Pin; User data and power supply suggestion: 14~24AWG. Please refer to the table 2-4 for the interface definition of the power cable and connection sequence. Specific interface definition of the power cable and connection sequence you can read on the labels of H820 products. Using 14~24AWG cable and referring to H820 products labels or the bellowed interface definition and connection sequence, you need to use the oblate screw driver to fix the cable to the connecting jacks of the pluggable terminal. After successfully connection, you need to insert the terminal into the corresponding position in the bottom of the H820 products.

Notes: Connection sequence should be accurate。Cable's insulating striping length is about 7mm. (For safety, insulating striping length should be too long). Please refer to the picture.



Attention:

1. *The power cable should be connected correctly. We "suggestion double check before switch it on .Wrong connections may destroy the equipment.*
2. *Power terminals: Pin 1 and Pin 2;*
3. *Here：Pin 2 is "GND", PIN 1 is power input "Vin"(DC5~40V, or DV5~50V).*

PIN	Signal	Description	Note
1	VCC	+5-40V DC Input, +5~50V option	Current：12V/1A
2	GND	Ground	
3	TX	Transmit Data	
4	RX	Receive Data	
5	PGND	Ground	
6	RST	Reset	Reset Pin has the same function with reset

			button. In the usage, it needs to be short connected to the GND. After giving the device a 1 sec low level, it will reboot.3 seconds, the device will restore factory settings
7	DIO0	General Purpose I/O	
8	DIO1	General Purpose I/O	
9	NC	Not connect	

I/O Terminal on router	Serial port (RS485 or RS232)
Port 3 (GND)	Pin 5
Port 4 (RX)	Pin 2
Port 5 (TX)	Pin 3

Notes: If not through, can switch Port4 and port5.

2.6 Grounding

To ensure a safe, stable and reliable H820 series operation, Router cabinet should be grounded properly.

2.7 Power Supply

H820 series can be applied to complicated external environment and usually the power range is very large. So in order to fit the complicated application environment and improve the stability of the system, H820 series is designed with advanced power management technology. The DC power supply electronic to the device via the pluggable terminal PIN 2(GND) and PIN 1(Vin). Please refer to the above table for the detail definition of the terminal.

Normally, H820 series input powers supply is +5～+40V (if your H820 support 50V, the option is +5~+50V). In most cases, the standard configuration is 12V/1A.

2.8 LED and Check Network Status

Please connect the antenna after you successfully connect to the cable. And then insert the valid SIM/UIM card and provide the power to the H820 series via the cable. After provide the power to H820, if the SYS LED starts to blink in a few seconds, that means the system start-up is normal; if the CELL LED works, that means the network is online; if the VPN light works, that means VPN tunnel has been set up. Please refer to the below table for the situation of the indication lights.

LED	Indication Light	Description
SYS	On for 25 seconds	On for 25 seconds after power supply
	blink	System set-up normally
	Off or still on after 25 seconds	System set-up failure
LAN1~ LAN4	blink	Data transmission in Ethernet
	Off	Ethernet connection abnormal
	On	Ethernet is connected
VPN	On	VPN tunnel set-up
	Off	VPN tunnel set-up failure or unactivated
CELL	On	Access to the Internet
WIFI	On	Enable
	Off	Disable
WAN	blink	Data transmission in Ethernet
	Off	Ethernet connection abnormal
	On	Ethernet is connected
Signal	Off	No signal, or signal checking is not ready
	4s blink 1 time	Signal bar is 1
	3s blink 1 time	Signal bar is 2
	2s blink 1 time	Signal bar is 3

	1s blink 1 time	Signal bar is 4
	1s blink 2 times	Signal bar is 5

Chapter 3

3 Software configuration

1. Overview
2. How to log into the Router
3. How to config web

3.1 Overview

H820 series routers with built-in WEB interface configuration, management and debugging tools, user should configuration the parameters first; and it could be altered the parameters flexibility and software upgrades and simple testing. User can set up and manage the parameters of the router on its interface, detail step are bellow:

3.2 How to log into the Router

3.2.1 Network Configuration of the Computer.

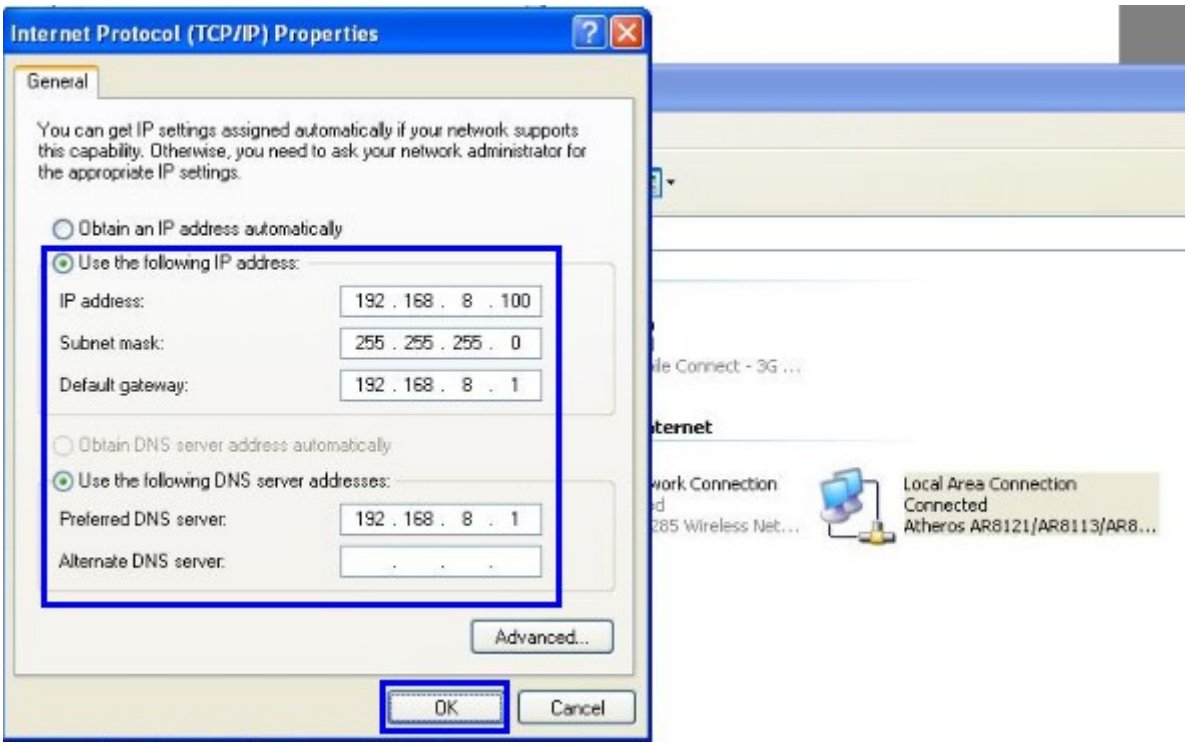
The router default parameters as follow

Default IP: 192.168.8.1, sub mask: 255.255.255.0.

There are two ways to set the PC's IP address.

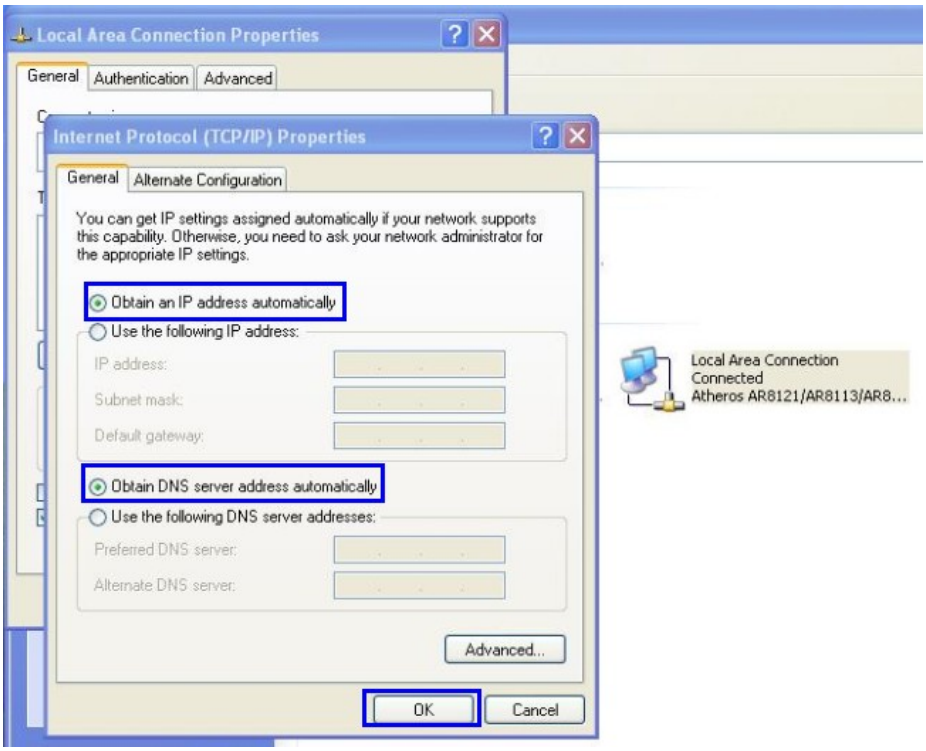
Way 1) Manual setting

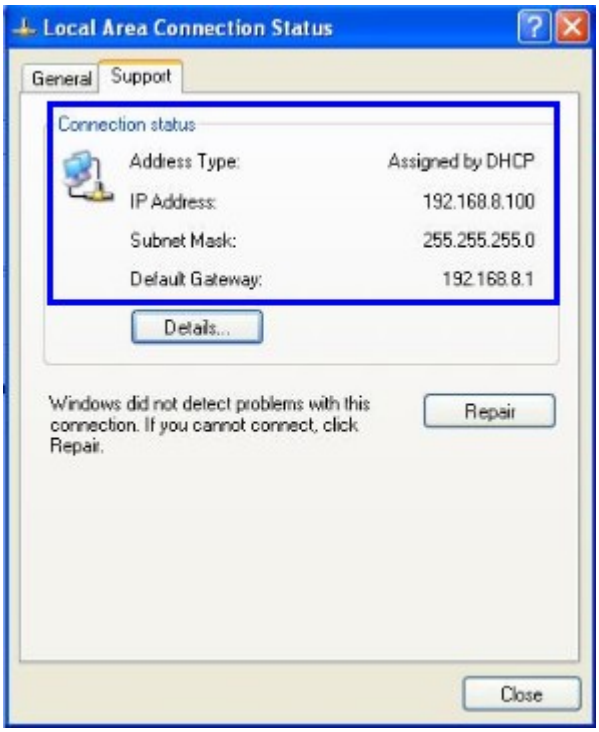
Set the PC IP as 192.168.8.xxx (xxx = 2~254), subnet mask: 255.255.255.0, default gateway: 192.168.8.1, primary DNS: 192.168.8.1.


Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address: 192 . 168 . 8 . 100
Subnet mask: 255 . 255 . 255 . 0
Default gateway: 192 . 168 . 8 . 1
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server: 192 . 168 . 8 . 1
Alternate DNS server:
Advanced...
OK
Cancel
Local Area Connection
Connected
Atheros AR8121/AR8113/AR8...

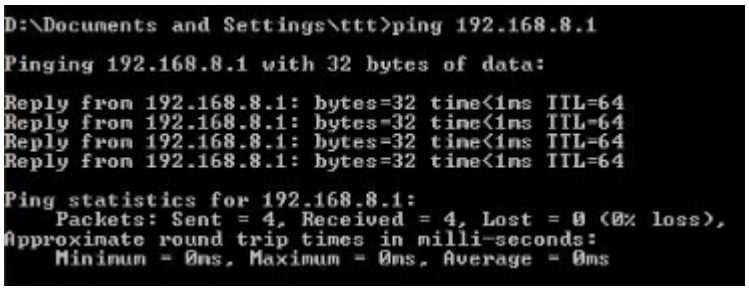
Way 2) DHCP

Choose “Obtain an IP address automatically” and “Obtain DNS server address automatically”.



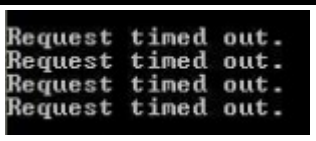


After IP setting, check it by ping. Click Windows start menu, run, execute “cmd” command. Input “ping 192.168.8.1” in the DOS window.


D:\Documents and Settings\ttt>ping 192.168.8.1
Pinging 192.168.8.1 with 32 bytes of data:
Reply from 192.168.8.1: bytes=32 time<1ms TTL=64
Reply from 192.168.8.1: bytes=32 time<1ms TTL=64
Reply from 192.168.8.1: bytes=32 time<1ms TTL=64
Reply from 192.168.8.1: bytes=32 time<1ms TTL=64
Ping statistics for 192.168.8.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms

This information means the connection is work.

Pinging 192.168.8.1 with 32 bytes of data:
Destination host unreachable.
Destination host unreachable.
Destination host unreachable.
Destination host unreachable.
Ping statistics for 192.168.8.1:
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),



This information means the connection is failure. If so, please check the network cable connection and IP address setting, and can refer to *Chapter 4.9*.

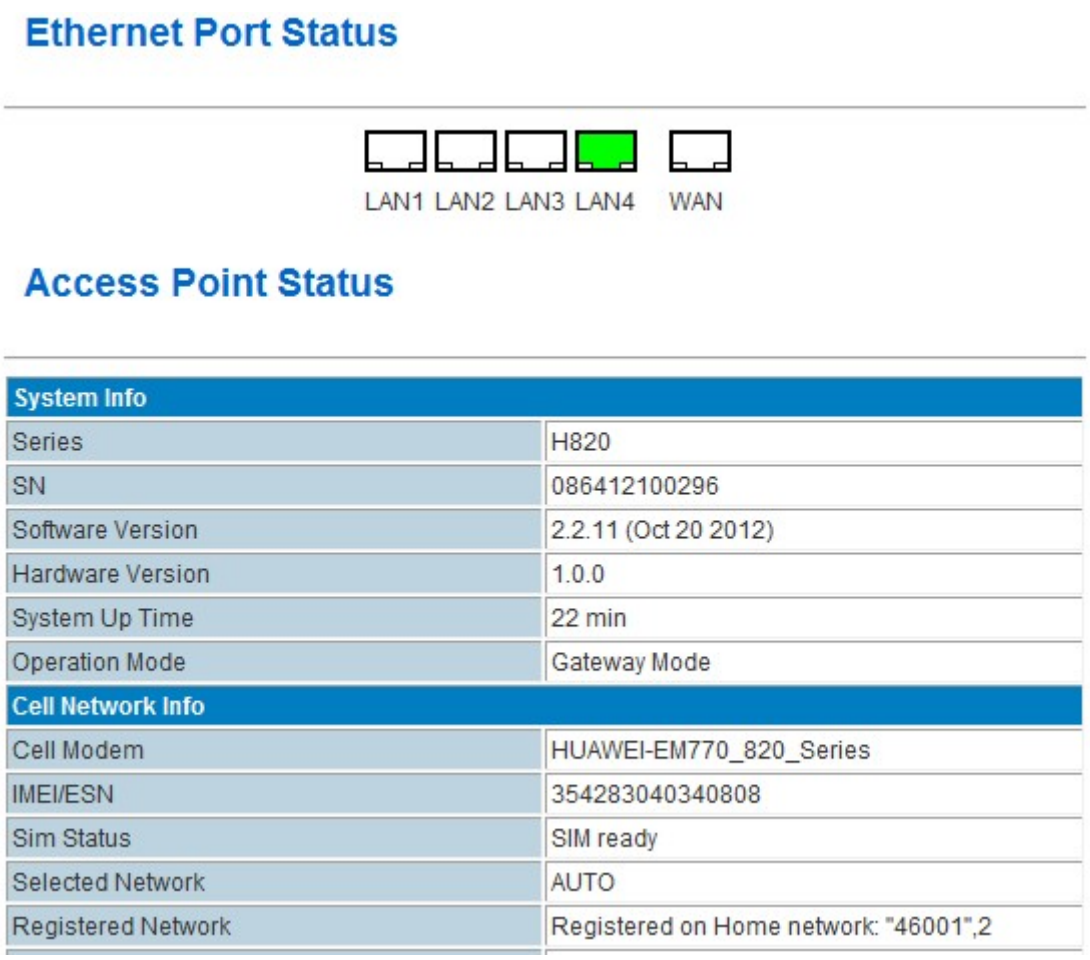
3.2.2 Log into Router

- Open the Web Browser, and type http://192.168.8.1 into the address field and press

Enter bottom in your computer keyboard.

- Type User Name “admin” and Password “admin” in the pop-up Login Window, and then press the “Apply” button.

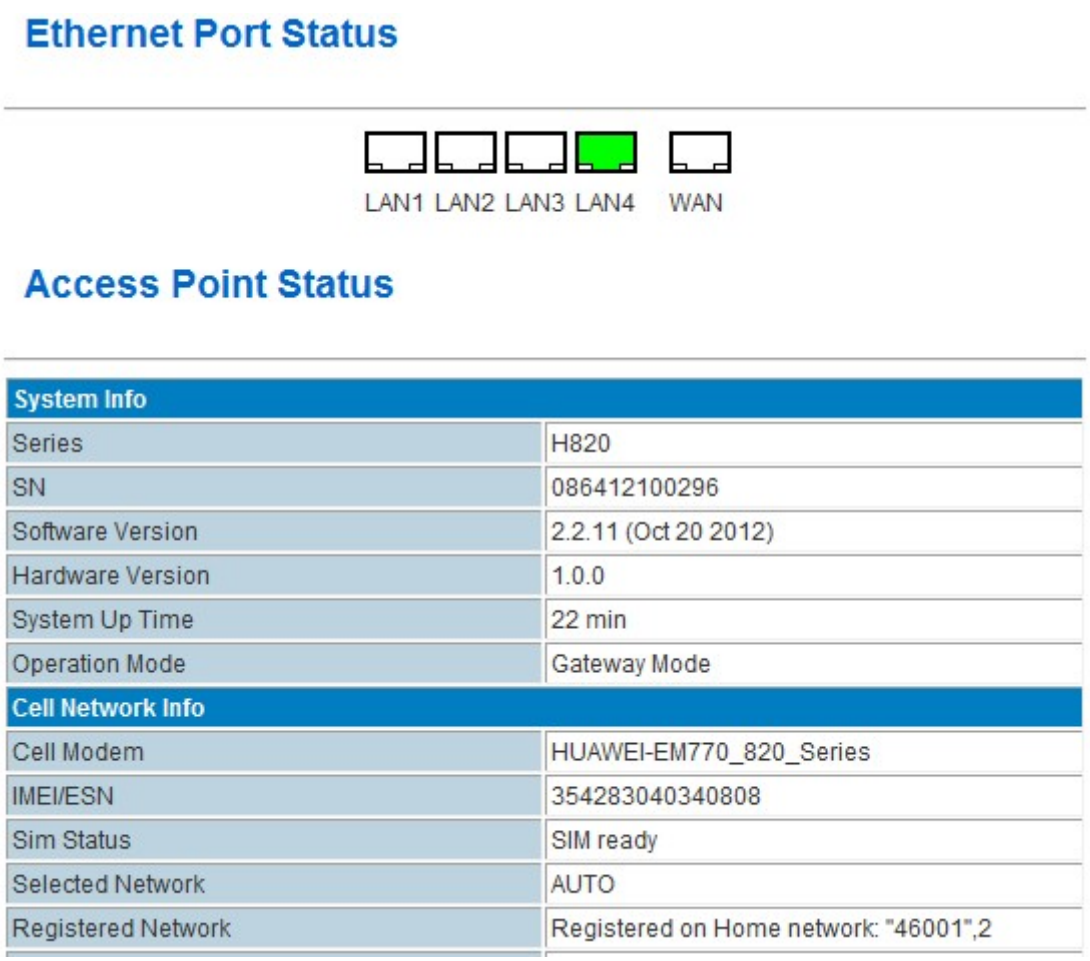
- If you type into the correct User Name and Password, you will get the access into the Router’s Web Management Page.



System Info	
Series	H820
SN	086412100296
Software Version	2.2.11 (Oct 20 2012)
Hardware Version	1.0.0
System Up Time	22 min
Operation Mode	Gateway Mode
Cell Network Info	
Cell Modem	HUAWEI-EM770_820_Series
IMEI/ESN	354283040340808
Sim Status	SIM ready
Selected Network	AUTO
Registered Network	Registered on Home network: "46001",2

3.3 How to configure web

3.3.1 Main Menu as below Picture



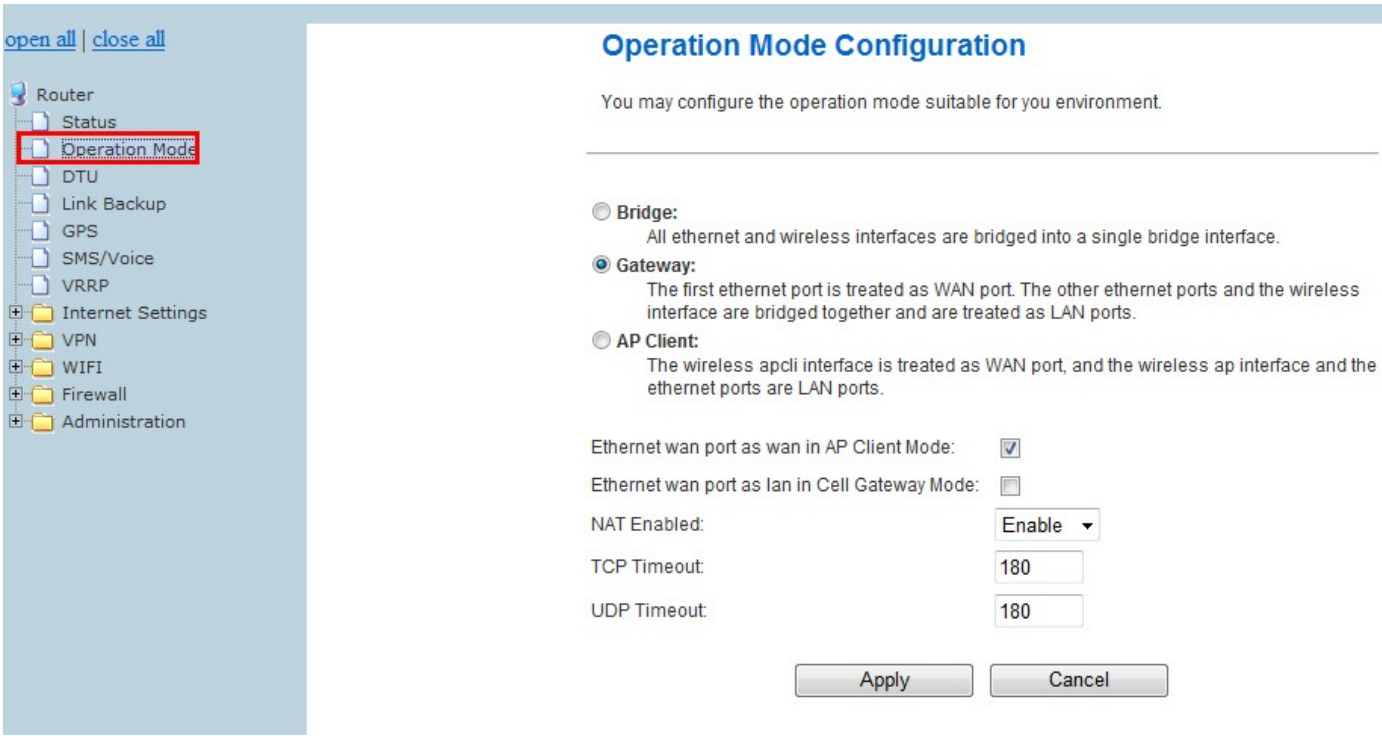
Ethernet Port Status

LAN1 LAN2 LAN3 LAN4 WAN

Access Point Status

System Info	
Series	H820
SN	086412100296
Software Version	2.2.11 (Oct 20 2012)
Hardware Version	1.0.0
System Up Time	22 min
Operation Mode	Gateway Mode
Cell Network Info	
Cell Modem	HUAWEI-EM770_820_Series
IMEI/ESN	354283040340808
Sim Status	SIM ready
Selected Network	AUTO
Registered Network	Registered on Home network: "46001",2

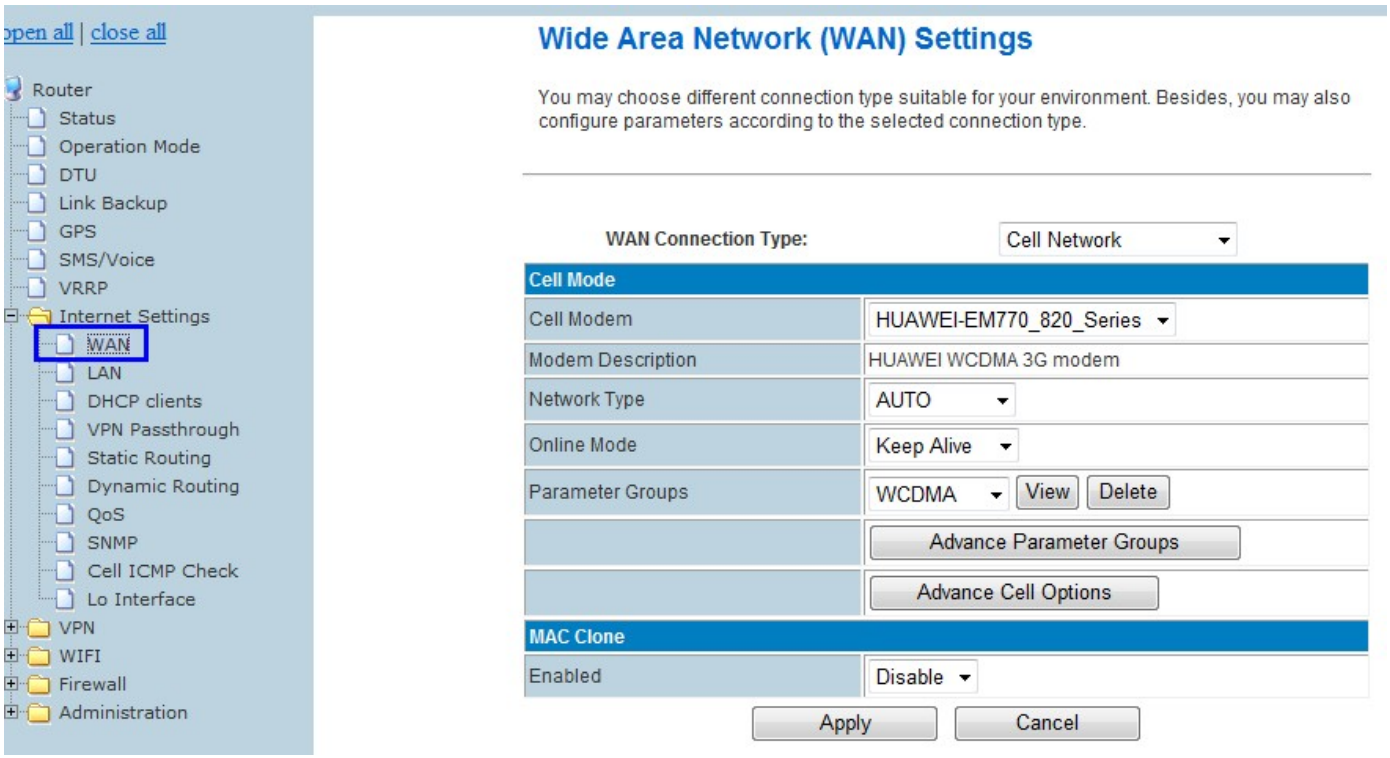
3.3.2 Operation Mode



- **Bridge**
  All Ethernet and wireless interfaces are bridged into a single bridge interface.
- **Gateway**
  The first Ethernet port is treated as WAN port. The other Ethernet ports and the wireless interface are bridged together and are treated as LAN ports.
- **AP Client**
  The wireless apcli interface is treated as WAN port and the wireless ap interface and the Ethernet ports are LAN ports.
- **NAT**
  Network Address Translation

Normally and default we select “Gateway mode”, and keep all other parameters as default.

3.3.3 WAN Settings

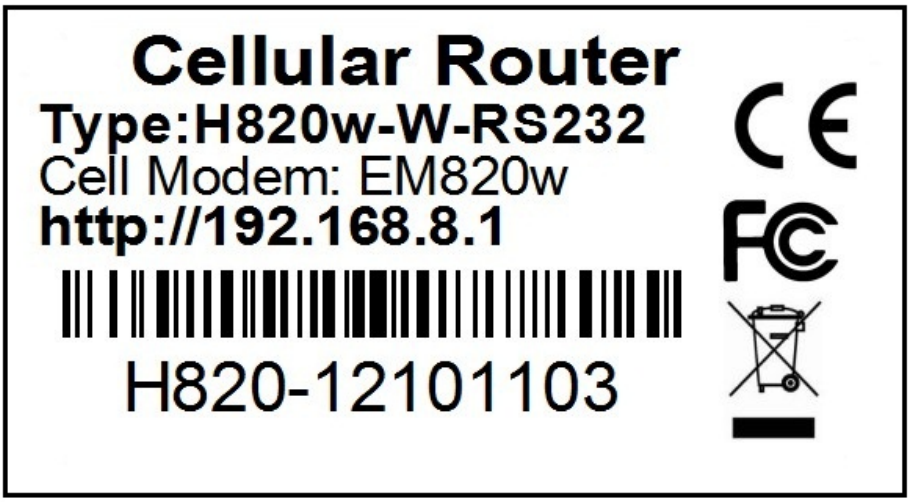


- **WAN Connection Type**
  Support Static IP, DHCP, PPPoE, L2TP, PPTP, CELL Network.

3.3.3.1 WAN – Cellular Network

- **Cell Modem**
  System supports different cell modem. Default, the router is with right Cell Modem name before shipment. If you replace with other different Cell Modem, must select *AUTO_DETECT* and click *Apply button* to reboot the router, the router will automatically check the Cell Modem name.

  Notes: the Cell Modem Type was marked on the back of the router.
  For example, it shows the following picture. H820 is the router series name, H820w-W-RS232 is the part number name. And the EM820w Cell Modem is the Cell Modem name.

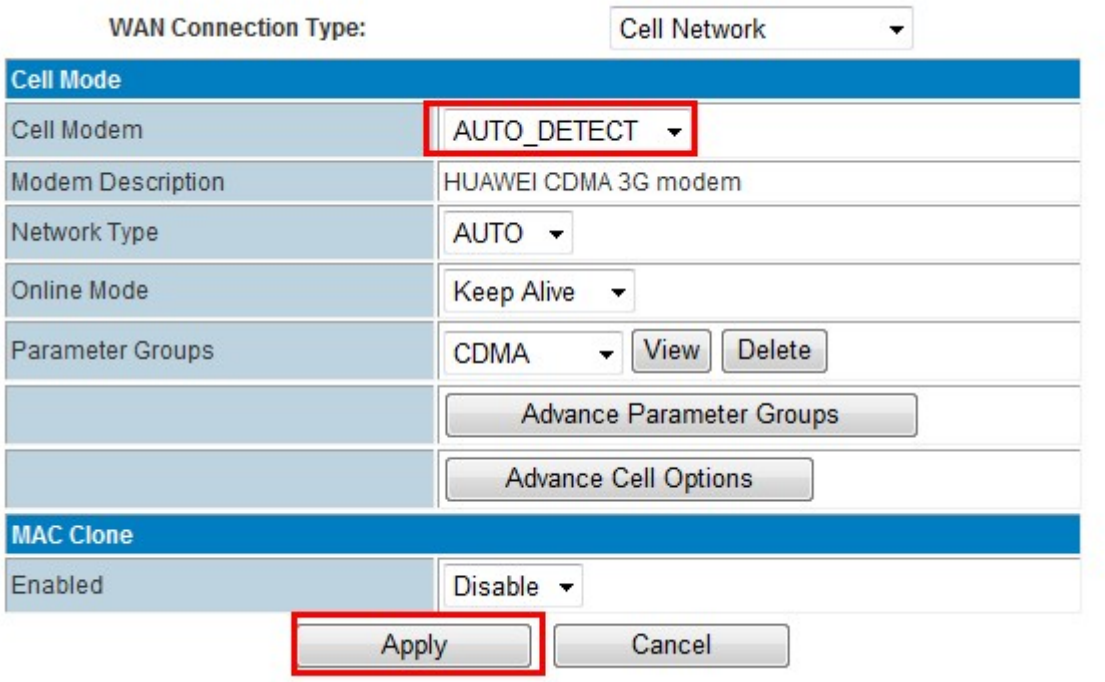


Cell Modem Detection Step >>

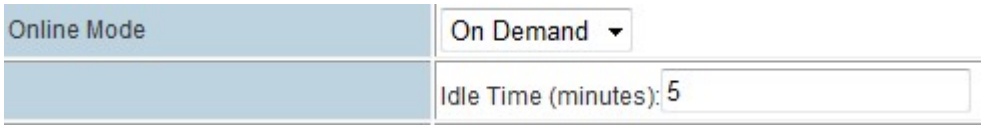
Notes: If you don't replace any cellular module or not do the "Load Default to factory", please skip this step and jump to next settings.

At "Cell Modem", please select "AUTO_DETECT", and click "Apply" button. The router will automatically detect the module modem.

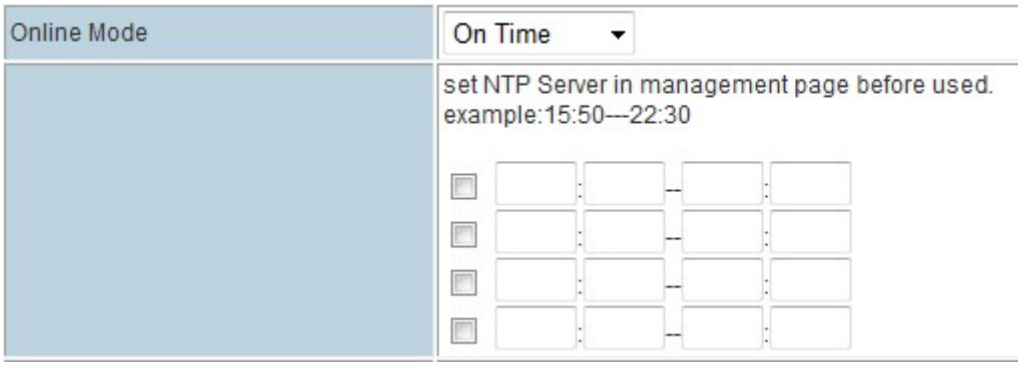
Notes: we highly suggest that reboot the router (power off and re-power on) after we select "AUTO_DETECT".



- **Modem Description**
  It will display related description after the H820 router detects the Cell Modem.
- **Network Type**
  Select the type. Different Cell Modem supports different types. Default select *AUTO*.
- **Online Mode**
  Keep Alive: means always online. The router will keep online whatever there is data for transmission or not.
  On Demand: The router will dialup when there is data for transmission.



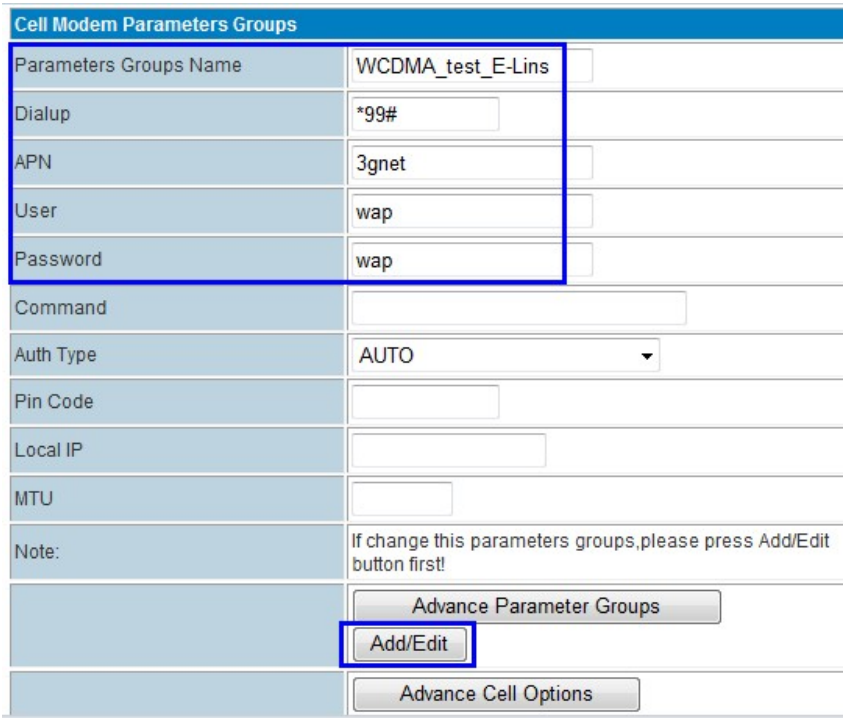
  Idle time (minutes): fill in the time. For example, fill in 5, the router will offline after 5 minutes if there is no data for transmission.
  On Time: router dialup or offline with schedule. Totally supports 4 groups.



- **MAC Clone**
  Enable and disable the MAC clone function.
- **Parameter Groups**

APN Group Option	Marks
AUTO	Only keep for future use. Normally do not select this
WCDMA	If your router is 4G LTE or WCDMA HSPA/HSDPA/HSUPA/HSPA+/EDGE/GPRS/GSM version, please select this one
CDMA	If your router is CDMA2000 EVDO or CDMA1x version, please select this one
TD-SCDMA	If your router is TD-SCDMA HSDPA/HSUPA version, please select this one
User-defined (only show after user defined one)	If you add one APN group with your defined parameters, please select this one

- **Advance Parameter Groups**
  Click *Advance Parameter Groups*, *Cell Modem Parameters Groups* expand. Define one APN Group to fit your network and sim card.



Fill in the related parameters. And DO NOT FORGET TO CLICK “Add/Edit” button.

Parameters Groups Name: you can fill in the name freely. But keep No Space between characters.

Dialup: fill in the related parameters. Get this parameter from the Sim Card Provider or Carrier;

APN: fill in the related parameters. Get this parameter from the Sim Card Provider or Carrier;

User: fill in the related parameters. Get this parameter from the Sim Card Provider or Carrier.
Notes: If your SIM card has no user name, please input out default value, otherwise the router may not dialup. Our default value for GSM/WCDMA/LTE is “wap”, and for CDMA/EVDO is “card”.

Password: fill in the related parameters. Get this parameter from the Sim Card Provider or Carrier.
Notes: If your SIM card has no user name, please input out default value, otherwise the router may not dialup. Our default value for GSM/WCDMA/LTE is “wap”, and for CDMA/EVDO is “card”.

Command: this is for command to control the module or router. Normally is for debug use.
Auth Type: Three options (AUTO, PAP, CHAP/MS-CHAP/MS-CHAP2). Please confirm your carrier provide the types of authentication. Normally select *AUTO*. If not work, try to use *PAP* or *CHAP*.
PIN code: if necessary. Most of sim card has no PIN code, and then keep it as blank.

Notes: Please press Add/Edit button to add your defined APN parameters. At *Parameter Groups*, it will automatically choose the defined *APN Parameter Groups*.

- **Advance Cell Options**

  Notes: If you don't know advance cell parameters very well, please keep default settings. Otherwise the router may not work.

  Click *Advance Parameter Groups*, *Cell Modem Parameters Groups* expand. 2nd click to contract.

Cell Options Advances Settings	
LCP	Disable Enable interval(sec): 10
PAP	Disable Auto
CHAP	Disable Auto
MS-CHAP	Disable Auto
MS-CHAP-V2	Disable Auto
Compression Control Protocal	Disable Require
Address/Control Compression	Disable Require
Protocal Field Compression	Disable Require
VJ TCP/IP Header Compression	Disable Require
Connection-ID Compression	Disable Require
BSD-Compress compression	Disable Require
Deflate compression	Disable Require
MPPE Encryption	Disable Enable
MPPE 40bit	Disable Enable
Refuse Stateless Encryption	Disable Enable
More Options ('~' for separate)	

  LCP: ppp dialup monitor. At *interval(sec)*, fill in the time for every check. For example, if fill in 10, the router will get LCP check every 10 seconds.
  Other parameters: user can disable or enable or define it.

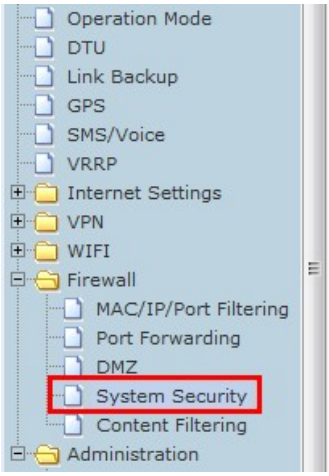
Notes:

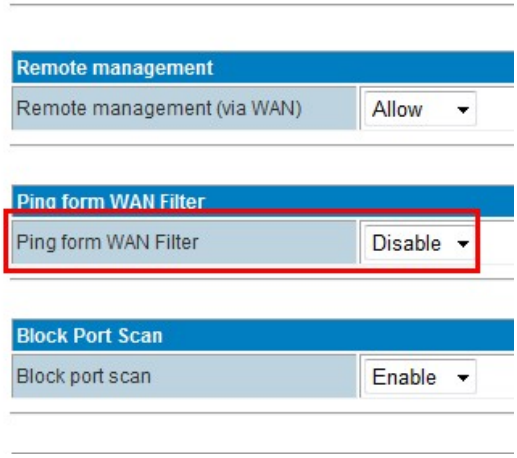
1. Do not forget to click *Apply* button after setting.
2. Sometimes the router cannot dialup after the APN configuration, please power off the router, and re-power on it. Because some radio modules need reboot after the initial APN configuration.

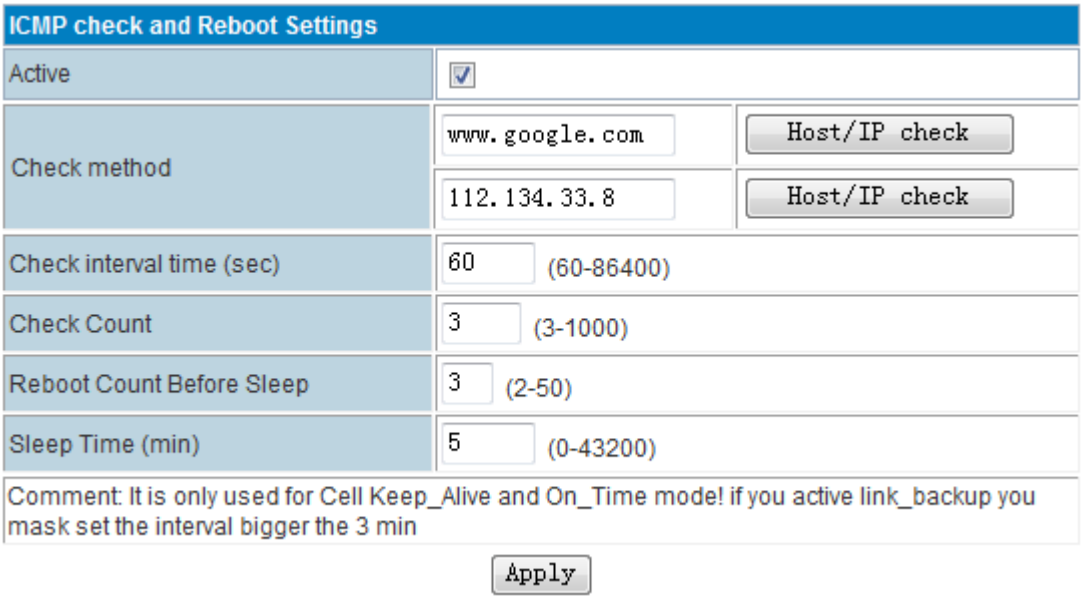
3.3.3.2 Cell ICMP Check

Notes:

1) For router working with best stability, we highly suggest activate and use this feature.
With this feature, the Router will automatically detect its working status and fix the problem.
2) Please disable the “Ping from WAN Filter” if use ICMP check feature, otherwise it cannot work.







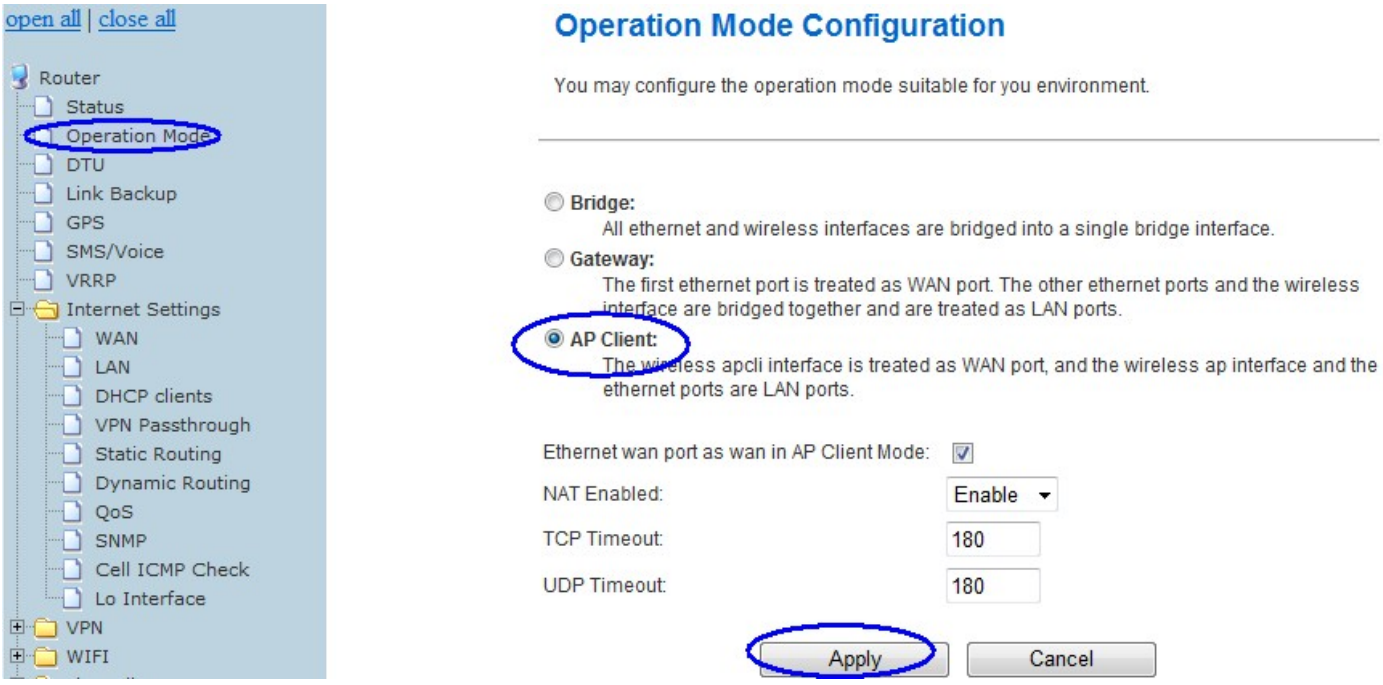
- **Active:** tick it to enable ICMP check feature

- **Check method:** fill in checking domain name or IP. Click *HOST/IP check* button to verify before using it.
- **Check interval time (sec):** set the interval time of every check
- **Check Count:** set the checking count number
- **Reboot Count Before Sleep:** H820 Router will sleep to stop checking after failed with set times.
- **Sleep Time (min):** H820 Router sleep timing before resume check.

Example with above picture:
H820 Router check "www.google.com" and "112.134.33.8", it will check 3 times. After the previous check, it will do next check after 60 seconds. Totally it will check 3 times. If 3 times all failed, H820 Router will reboot. If reboots 3 times continuously, H820 Router goes to sleep to stop checking. The sleep time is 5 minutes. After 5 minutes, H820 Router resume to cycle the checking.

3.3.3.3 AP Client mode (WiFi Client)

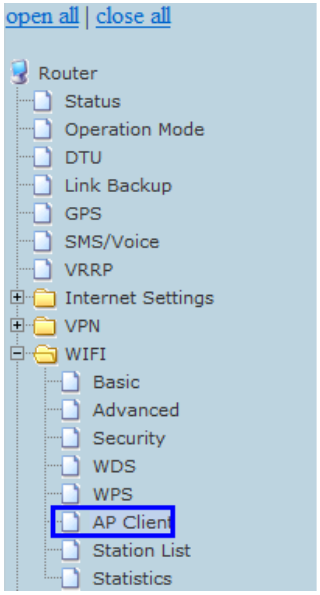
Set H820 as an AP client, H820 will connect the upper WiFi router or WiFi AP.
Step1)
H820 web -- Operation Mode – Choose "AP Client", and click apply button. Wait some time until the H820 make the setting works.

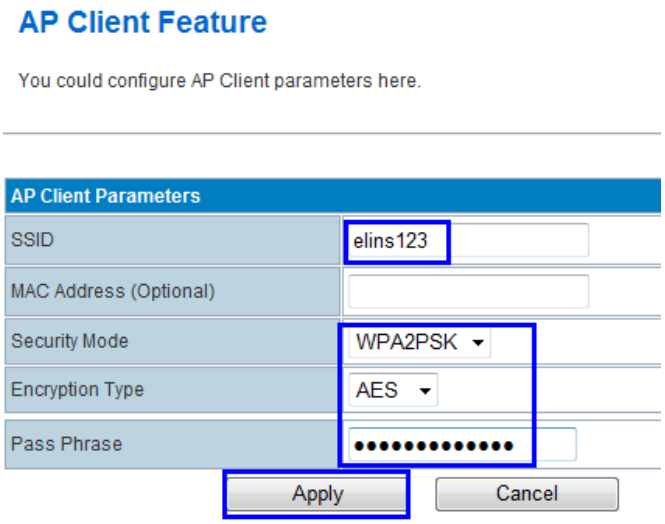


The router will switch to AP Client mode.

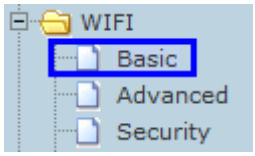
Step2)
WIFI – AP Client

Here fill in the parameters.
SSID: input the WiFi router's SSID
Security Mode: choose correct one to match the WiFi router/AP you want to connect.
Encryption Type: choose correct one to match the WiFi router/AP you want to connect.

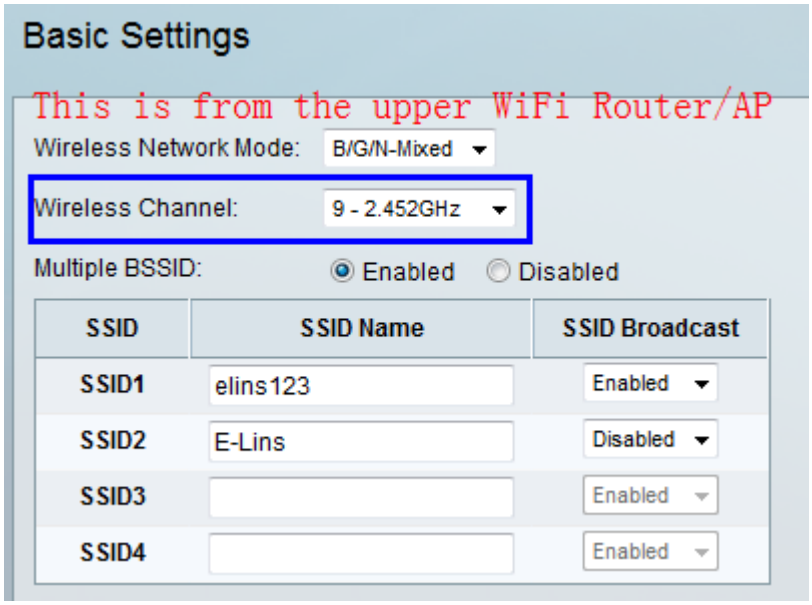




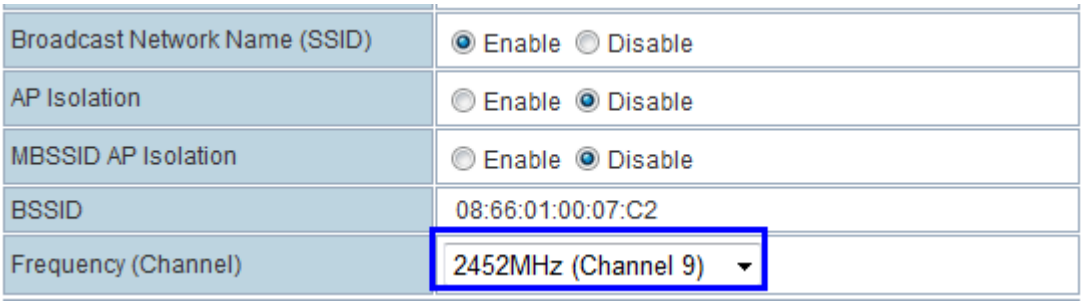
Step3)
WIFI -- Basic



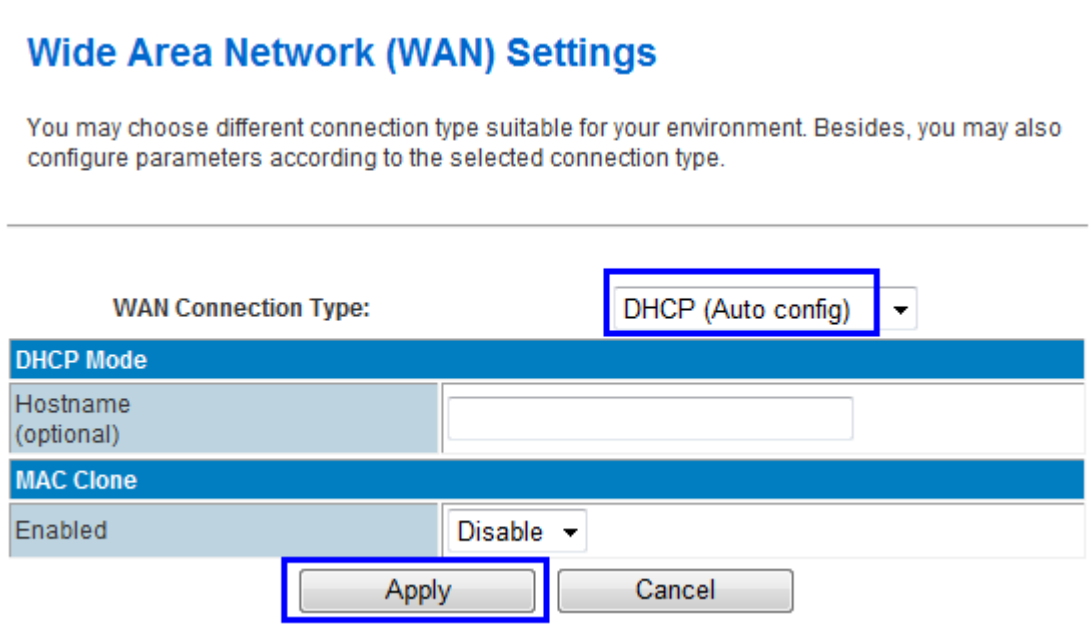
Here please select the right channel the same with the upper WiFi Router/AP you want to connect.



Then choose the same Channel in H820 router as follows,



Step4)
Internet Settings – WAN



At “WAN Connection Type”, choose “DHCP (Auto Config)”, and click “Apply” button. The H820 router will automatically connect the WiFi Router and get local IP from the wifi router. You can check at status info page.

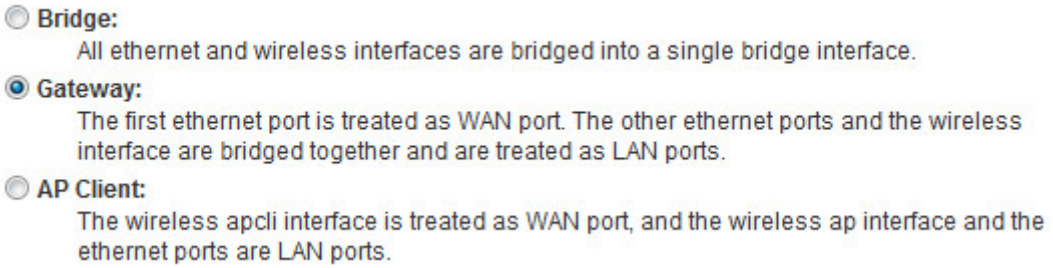
3.3.3.4 WAN – PPPoE (xDSL)

Set H820 WAN via PPPoE, H820 will connect the upper PPPoE modem.

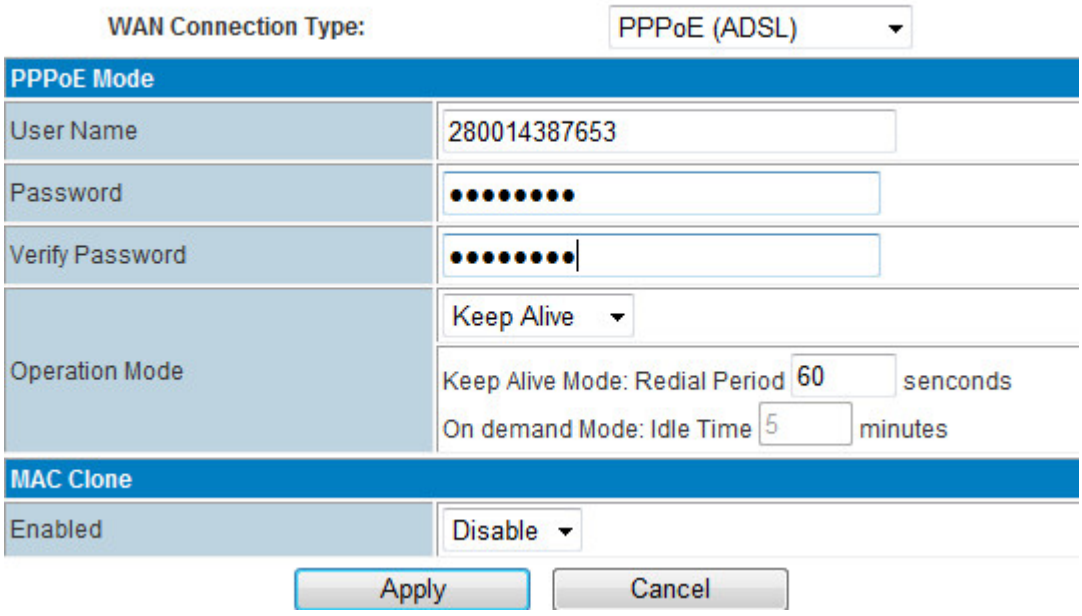
Step 1)
Connect RJ45 cable between PPPoE modem to H820 WAN RJ45 port. Once it’s connected, the H820 Web *Ethernet Port Status* will display.

Notes: you may not see the WAN RJ45 connection status. But it will flash to fresh the status every 30 seconds. Or you can manually flash to fresh.

Step 2)
H820 web – Operation Mode, choose “Gateway” mode


Bridge:
All ethernet and wireless interfaces are bridged into a single bridge interface.
Gateway:
The first ethernet port is treated as WAN port. The other ethernet ports and the wireless interface are bridged together and are treated as LAN ports.
AP Client:
The wireless apcli interface is treated as WAN port, and the wireless ap interface and the ethernet ports are LAN ports.

Step 3)
H820 web – Internet Settings – WAN – WAN Connection Type, choose “PPPoE (ADSL)”



- **WAN Connection Type:** choose “PPPoE (ADSL)”
- **User Name:** fill in the PPPoE username
- **Password:** fill in the PPPoE password
- **Operation Mode:**
  Keep Alive: PPPoE will keep online whatever if there is data transmission.
  Fill in the Redial Period time.

On Demand: PPPoE dialup with data transmission demand.
Set the Idle Time. PPPoE will be offline if the set idle time has no data transmission.
Manual: need manually dialup.

Click “Apply” button.

Step 4)
H820 web – Status, it display the WAN IP once the PPPoE is online.

Internet Configurations	
Connected Type	PPPOE
WAN IP Address	119.59.141.4
Subnet Mask	255.255.255.255
Default Gateway	119.59.141.1
Primary Domain Name Server	211.162.78.1
Secondary Domain Name Server	211.162.78.3
MAC Address	08:66:01:00:04:A0

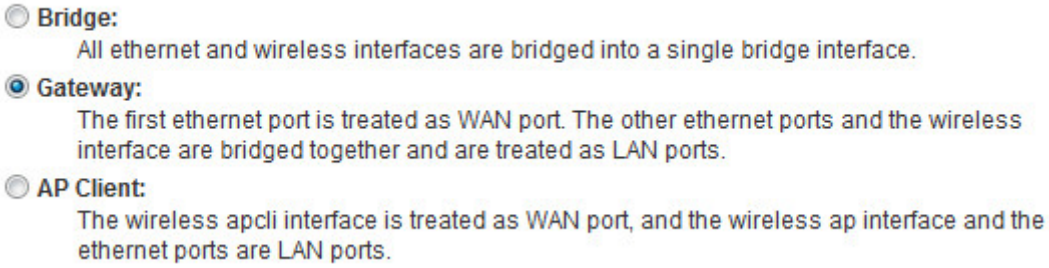
3.3.3.5 WAN – STATIC (fixed IP)

Set H820 WAN via STATIC fixed IP, H820 will connect the upper router via STATIC fixed IP.

Step 1)
Connect RJ45 cable between Upper Router LAN RJ45 to H820 WAN RJ45 port. Once it’s connected, the H820 Web *Ethernet Port Status* will display.

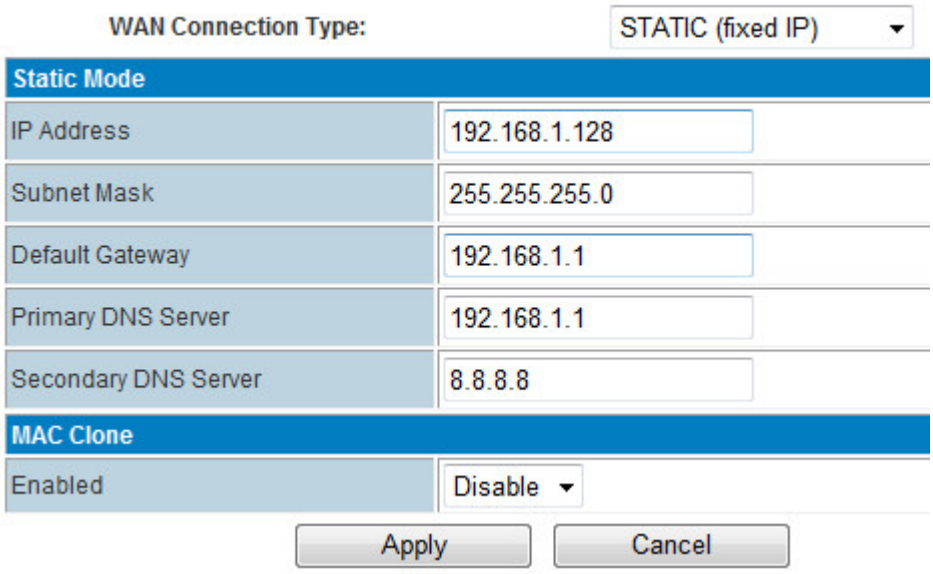
Notes: you may not see the WAN RJ45 connection status. But it will flash to fresh the status every 30 seconds. Or you can manually flash to fresh.

Step 2)
H820 web – Operation Mode, choose “Gateway” mode


Bridge:
All ethernet and wireless interfaces are bridged into a single bridge interface.
Gateway:
The first ethernet port is treated as WAN port. The other ethernet ports and the wireless interface are bridged together and are treated as LAN ports.
AP Client:
The wireless apcli interface is treated as WAN port, and the wireless ap interface and the ethernet ports are LAN ports.

Step 3)

H820 web – Internet Settings – WAN – WAN Connection Type, choose “STATIC (fixed IP)”



- **WAN Connection Type:** choose “STATIC (fixed IP)”
- **IP Address:** fill in one IP Address. This IP Address should be same range of the Upper Router.

For example, the Upper Router LAN IP is 192.168.1.1 and Subnet Mask is 255.255.255.0, you can fill in the parameters as above.

- **Subnet Mask**: fill in the Subnet Mask from the Upper Router.
- **Default Gateway**: fill in the Upper Router’s Gateway IP.
- **Primary DNS Server**: If your Upper Router supports DNS proxy, fill in the Upper Router’s LAN IP as Primary DNS Server. Or you can fill in the correct DNS Server IP.
- **Secondary DNS Server**: Fill in a working secondary DNS Server IP.

Click “Apply” button.

Step 4)

H820 web – Status, it display the WAN IP once the STATIC (fixed IP) is online.

Internet Configurations	
Connected Type	STATIC
WAN IP Address	192.168.1.128
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.1
Primary Domain Name Server	192.168.1.1
Secondary Domain Name Server	8.8.8.8
MAC Address	08:66:01:00:04:A0

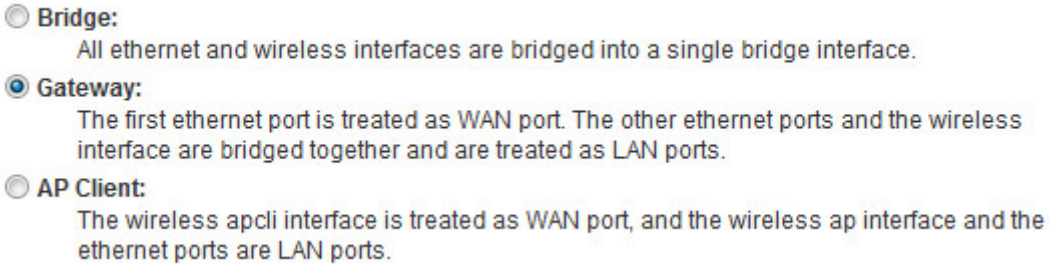
3.3.3.6 WAN – DHCP (Auto config)

Set H820 WAN via DHCP (Auto config), H820 will connect the upper router via DHCP.

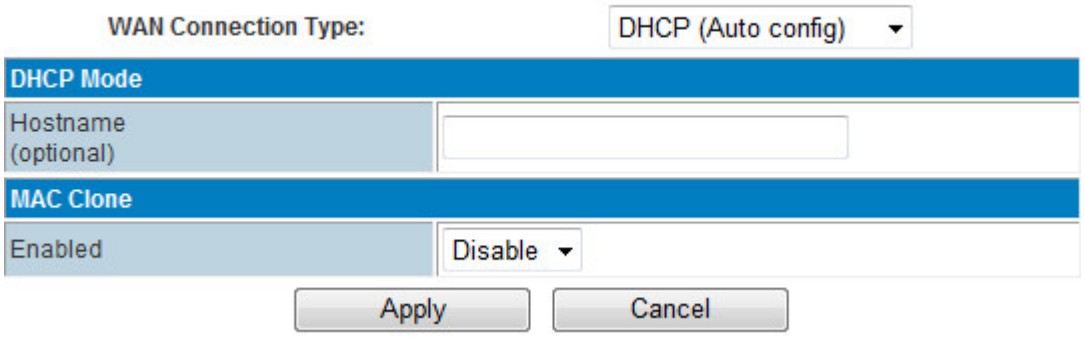
Step 1)
Connect RJ45 cable between Upper Router LAN RJ45 to H820 WAN RJ45 port. Once it's connected, the H820 Web *Ethernet Port Status* will display.

Notes: you may not see the WAN RJ45 connection status. But it will flash to fresh the status every 30 seconds. Or you can manually flash to fresh.

Step 2)
H820 web – Operation Mode, choose "Gateway" mode


Bridge:
All ethernet and wireless interfaces are bridged into a single bridge interface.
Gateway:
The first ethernet port is treated as WAN port. The other ethernet ports and the wireless interface are bridged together and are treated as LAN ports.
AP Client:
The wireless apcli interface is treated as WAN port, and the wireless ap interface and the ethernet ports are LAN ports.

Step 3)
H820 web – Internet Settings – WAN – WAN Connection Type, choose "DHCP (Auto config)"



- **WAN Connection Type:** choose “DHCP (Auto config)”

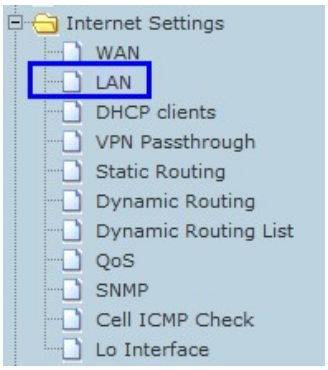
Click “Apply” button.

Step 4)

H820 web – Status, it display the WAN IP once the DHCP (Auto config) is online.

Internet Configurations	
Connected Type	DHCP
WAN IP Address	192.168.1.103
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.1
Primary Domain Name Server	192.168.1.1
Secondary Domain Name Server	192.168.1.1
MAC Address	08:66:01:00:04:A0

3.3.4 LAN Settings



LAN Setup	
IP Address	192.168.8.1
Subnet Mask	255.255.255.0
LAN 2	Enable Disable
LAN2 IP Address	
LAN2 Subnet Mask	
MAC Address	08:66:01:00:04:A1
DHCP Type	Server
Start IP Address	192.168.8.100
End IP Address	192.168.8.200
Subnet Mask	255.255.255.0
Primary DNS Server	168.95.1.1
Secondary DNS Server	8.8.8.8
Default Gateway	192.168.8.1
Lease Time	86400

Setting the LAN parameters, include IP address, sub mask, VLAN, DHCP, etc.

Notes: if you change the Router gateway IP address, do not forget to change the Default Gateway manually same as IP address.

3.3.4.1 Router Gateway IP

Default, the Router LAN IP is 192.168.8.1. If users want to modify it, please change the related parameters.

LAN Setup	
IP Address	192.168.1.1
Subnet Mask	255.255.255.0
LAN 2	Enable Disable
LAN2 IP Address	
LAN2 Subnet Mask	
MAC Address	08:66:01:00:04:A1
DHCP Type	Server
Start IP Address	192.168.1.100
End IP Address	192.168.1.200
Subnet Mask	255.255.255.0
Primary DNS Server	168.95.1.1
Secondary DNS Server	8.8.8.8
Default Gateway	192.168.1.1
Lease Time	86400

IP Address: change the value you need
Start IP Address: for DHCP start IP
End IP Address: for DHCP end IP
Default Gateway: manually change it after you modify the *IP Address*.

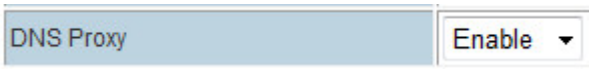
3.3.4.2 MAC binding

H820 Router supports 3 groups of MAC Binding. The parameter value format is as followed picture.

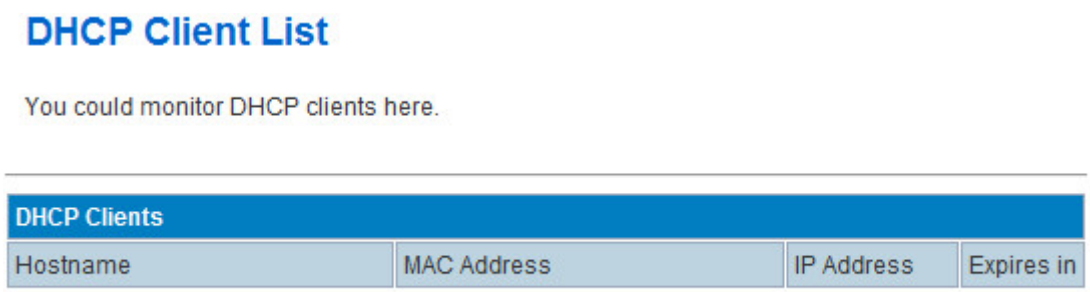
Statically Assigned	MAC: 00:21:86:61:7A:88 IP: 192.168.8.2
Statically Assigned	MAC: IP:
Statically Assigned	MAC: IP:

3.3.4.3 DNS Proxy

H820 Router default enables the DNS Proxy. With this, the H820 router can get DNS automatically and assigned to the PC/Device. If disable the DNS Proxy, please input correct DNS for your PC/Device, otherwise, it may not work correctly.



3.3.5 DHCP Client



List the Clients which gain IP address from DHCP.

3.3.6 Configure Static Routing

This section mainly introduces what is Routing Table and how to configure static router.

- Routing Table

  This page shows the key routing table of this router.

Current Routing table in the system:

No.	Destination	Netmask	Gateway	Flags	Metric	Ref	Use	Interface	Comment
1	10.64.64.64	255.255.255.255	0.0.0.0	5	0	0	0	WAN (ppp0)	
2	255.255.255.255	255.255.255.255	0.0.0.0	5	0	0	0	LAN (br0)	
3	192.168.8.0	255.255.255.0	0.0.0.0	1	0	0	0	LAN (br0)	
4	0.0.0.0	0.0.0.0	10.64.64.64	3	0	0	0	WAN (ppp0)	

- New Static Router

  This page is about how to set static routing function of the router.

Add a routing rule	
Destination	
Range	Host
Gateway	
Interface	LAN
Comment	

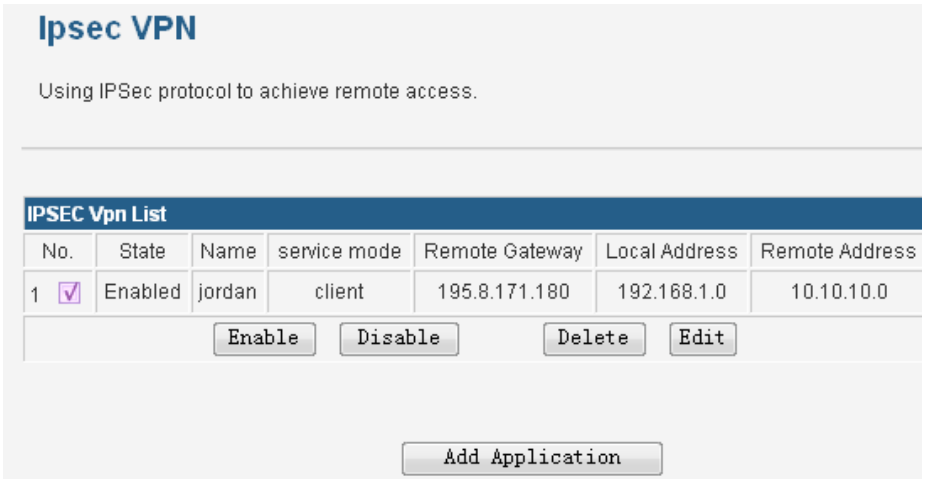
Destination: please enter Target Host or IP network segment
Range: Host or Network can be chosen
Gateway: IP address of the next router.
Interface: You can choose the corresponding interface type.
Comment: some notes
Notice:

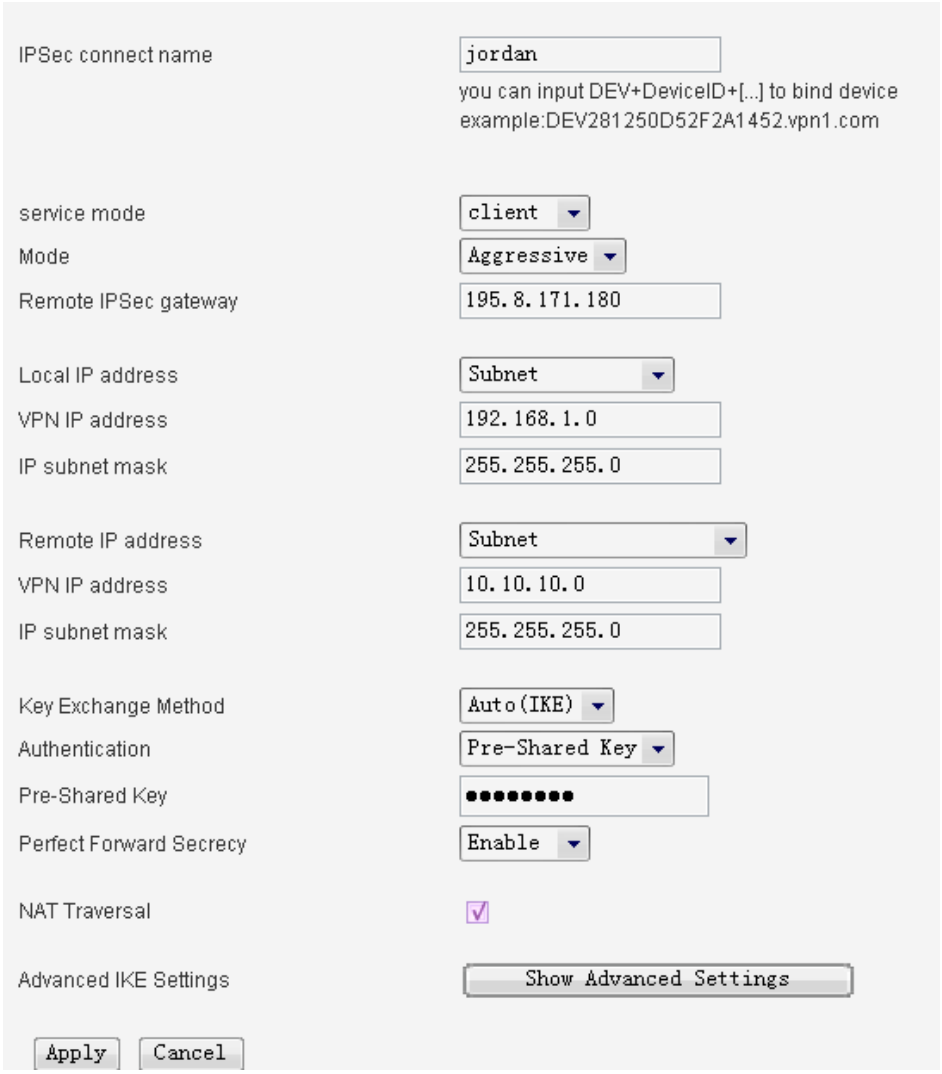
- Gateway and LAN IP of this router must belong to the same network segment.
- If the destination IP address is the one of a host, and then the Subnet Mask must be 255.255.255.255.
- If the destination IP address is IP network segment, it must match with the Subnet Mask. For example, if the destination IP is 10.0.0.0, and the Subnet Mask is 255.0.0.0.

3.3.7 VPN

Notes: the following VPN configuration manual may be out of date. We update the IPSec and PPTP configuration in another manual. Please refer to manual of "H685_H820_VPN_Usermanual_Eng.pdf"

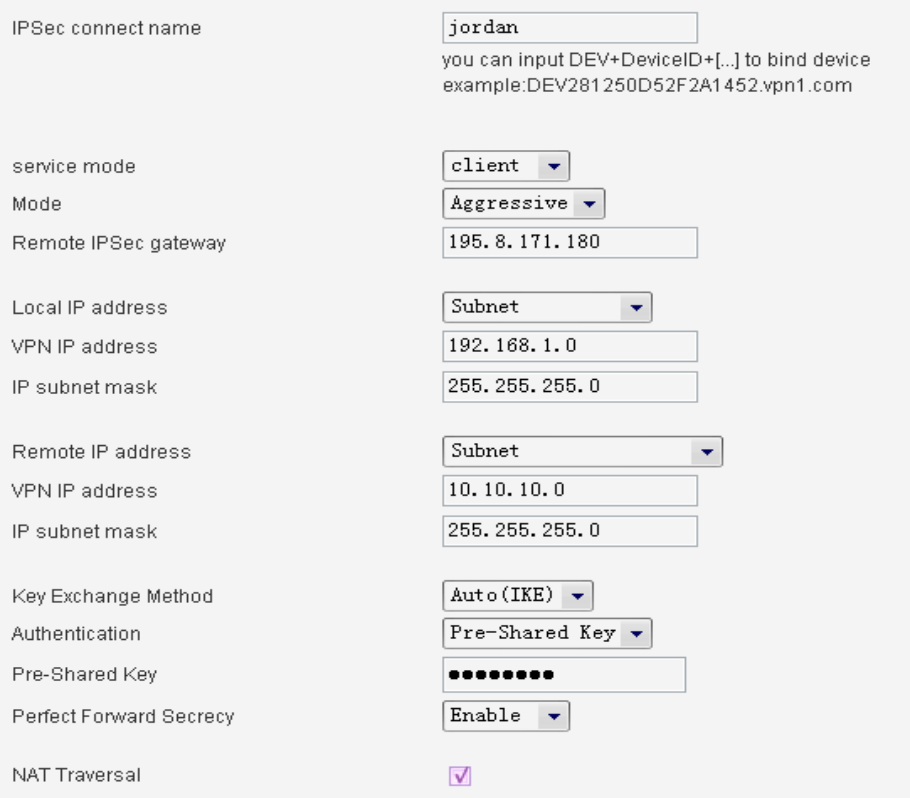
3.3.7.1 IPSEC

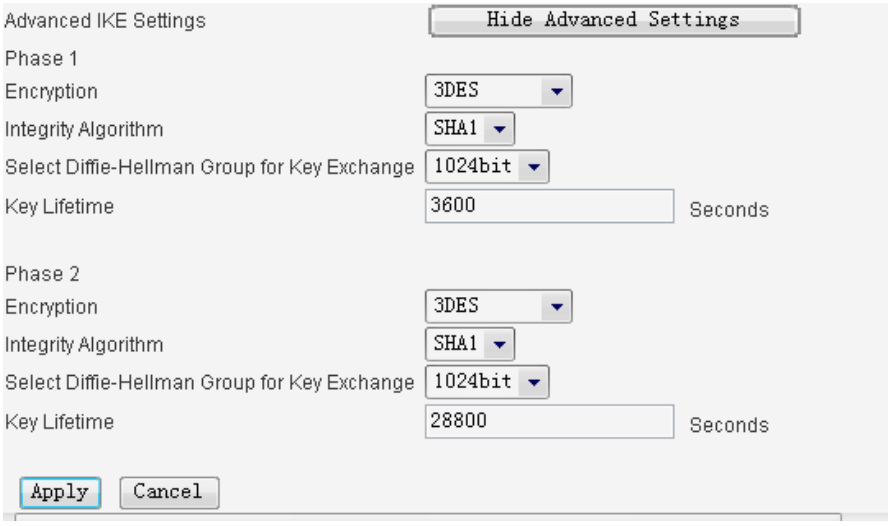

Ipsec VPN
Using IPSec protocol to achieve remote access.
IPSEC Vpn List
No. State Name service mode Remote Gateway Local Address Remote Address
1 Enabled jordan client 195.8.171.180 192.168.1.0 10.10.10.0
Enable Disable Delete Edit
Add Application



- **IPsec connect name**: make sure the name in client and server are same, we suggest to use domain name (111.vpn1.com). if you want to build a point-to-point channel, the IPsec name have to be written as DEV+equipment ID+name (DEV281250D52F2A1452.vpn1.com), and make sure both the client and server are inputing Client equipment ID. You can find H820's ID in the Status interface.
- **Service Mode**: Server/Client

- **Mode**: Main/Aggressive. The Aggressive mode is commonly used.
- **Remote Gateway**: This choice just appears in the Client mode and it is used to fill the IP address in the Server.
- **Local IP address**: Fill LAN IP of this device. You can fill an IP or a network segment.
- **Remote IP address**: Fill the IP of the other router.
- **Authentication**: Commonly, Pre-Shared Key is chosen. And the Client and Server must choose the same key.
- **Advanced AKE settings:** There are some encryption methods in this field. You must use the settings in this field when VPN tunnel needs to be built between H820 and other brand VPN server.
- **Example: Connected cisco 7200 and H820**
  How to config H820 as VPN clinet
  IPsec Name: make sure the name in client and server are same, we suggest to use domain name(111.vpn1.com). if you want to build a point-to-point channel, the IPsec name have to be written as DEV+equipment ID+name(DEV281250D52F2A1452.vpn1.com), and make sure both the client and server are inputing Client equipment ID. You can find H820's ID in the Status interface.





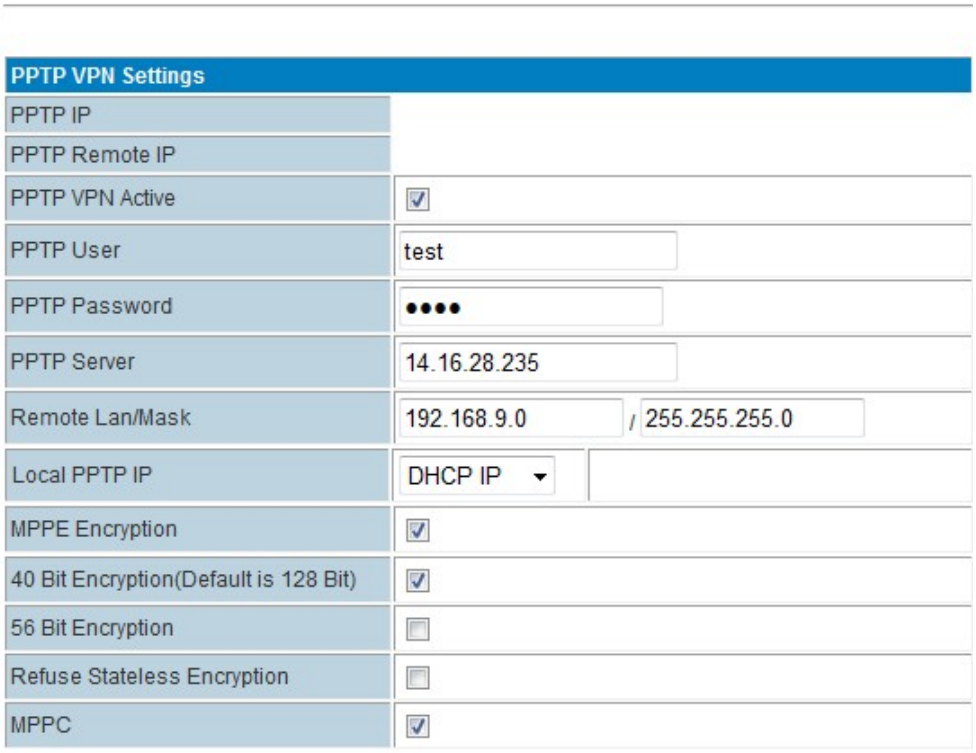
How to config CISCO 7200 as VPN Server

```
crypto keyring jordan
 pre-shared-key hostname jordan key test

 crypto isakmp profile jordan
  description china SZ shenzhen
  keyring jordan
  match identity host jordan
  keepalive 60 retry 10

 crypto ipsec transform-set vpnset esp-des esp-sha-hmac

 crypto ipsec profile jordan
set transform-set vpnset
set isakmp-profile jordan

 crypto dynamic-map jordan 1
  set security-association lifetime kilobytes 536870912
  set security-association lifetime seconds 43200
  set transform-set vpnset
  set isakmp-profile jordan
  reverse-route
   crypto map COREVPN 26 ipsec-isakmp dynamic jordan
```

3.3.7.2 PPTP

1) PPTP Client

PPTP Client



PPTP feature works as Client only.

- **PPTP VPN Active**: tick it to enable VPN feature.
- **PPTP User**: fill in the right username, which is from the PPTP Server.
- **PPTP Password:** fill in the right password, which is from the PPTP Server.
- **PPTP Server**: fill in the PPTP Server is IP address or domain name.
- **Remote Lan/Mask**: fill in the PPTP Server's LAN range and submask.
- **Local PPTP IP**: default chooses "dhcp". If choose "static", please fill in a local PPTP assigned IP, which depends on PPTP Server's settings.
- **MPPE Encryption:** tick it or not depends on PPTP Server's settings.
- **40 bit Encryption(Default is 128 bit)**: tick it or not depends on PPTP Server's settings.
- **Refuse Stateless Encryption**: tick it or not depends on PPTP Server's settings.
- **MPPC**: tick it or not depends on PPTP Server's settings.

Click "apply" button to activate the settings. The PPTP client will try to connect the PPTP Server automatically. See example of *Chapter 5.8*.

Notes:
1) If the PPTP cannot through between client and server, please check if the MPPE configuration is matched with PPTP server or not.
2) Normally PPTP server has route for 192.168.1.1/24 or 192.168.0.1/24. Please check the PPTP

server has the route of 192.168.8.0/24 if your H820 router is with IP 192.168.8.1.
For example, if H820 LAN IP is 192.168.8.1 and assigned PPTP IP is 172.1.1.2. Then at the PPTP server, need add a route for 192.168.8.0/24 and gateway as 172.168.1.2. Meanwhile, we suggest PPTP Server use fixed PPTP IP rule for PPTP client, otherwise need modify the route's gateway every time because the PPTP client gets a random PPTP IP.

3) For PPTP Server, there is two types. One is Windows Server, the other is Router Server.
Our H685/H820 router' default firmware is suitable for PPTP Server with Router. If the PPTP Server is Windows Server, please ask us for dedicated firmware.

Typical Application (1) E-Lins Router as PPTP Client --- Connects --- E-Lins Router as PPTP Server:
Once PPTP setup, the two E-Lins router will add the route themselves automatically.

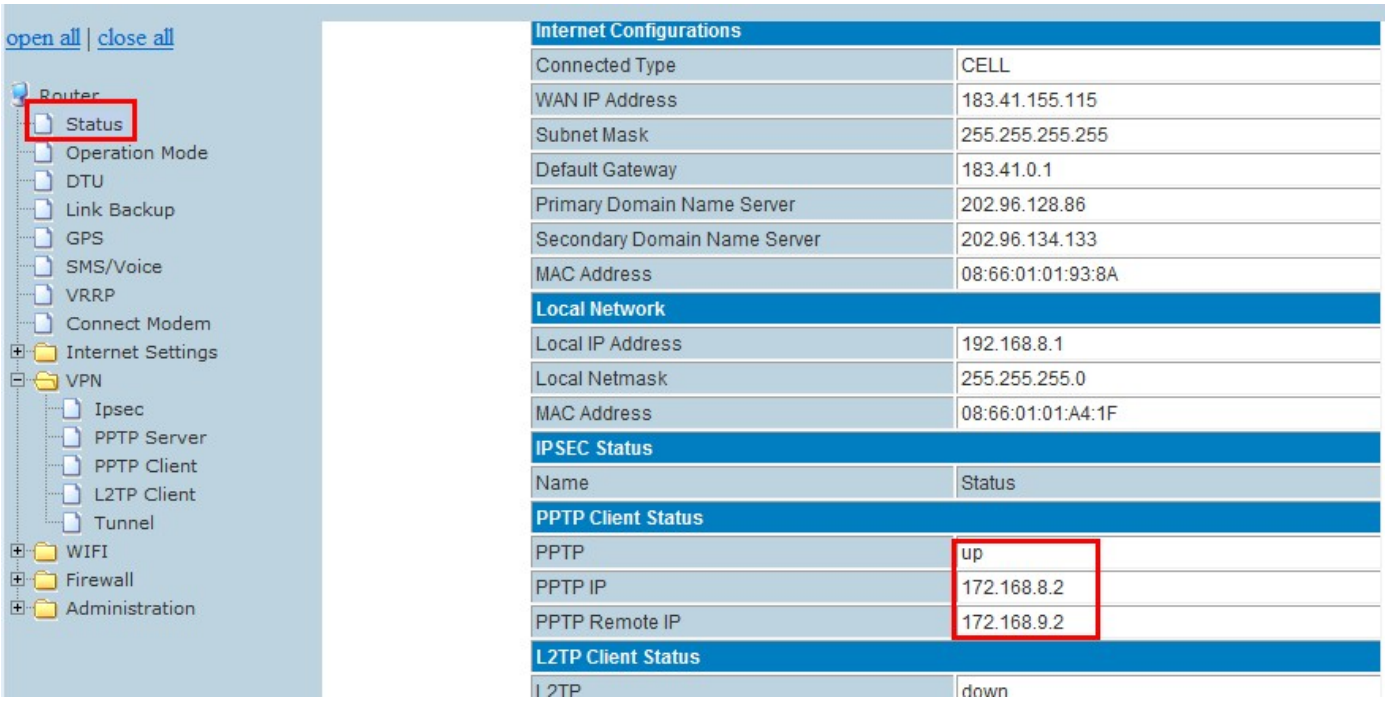
Typical Application (2) E-Lins Router as PPTP Client --- Connects --- Other Router/Windows as Server:
Once PPTP setup, the E-Lins router will add the route itself automatically. But the PPTP Server will not add the route automatically. So need manually add it.

Typical Application (3) Mobile Phone/Portable Devices as PPTP Client --- Connects --- E-Lins Router/Windows/Other Router as PPTP Server:
No need add the route.

Once the PPTP VPN connects, it indicates the VPN IP as below,

PPTP Client

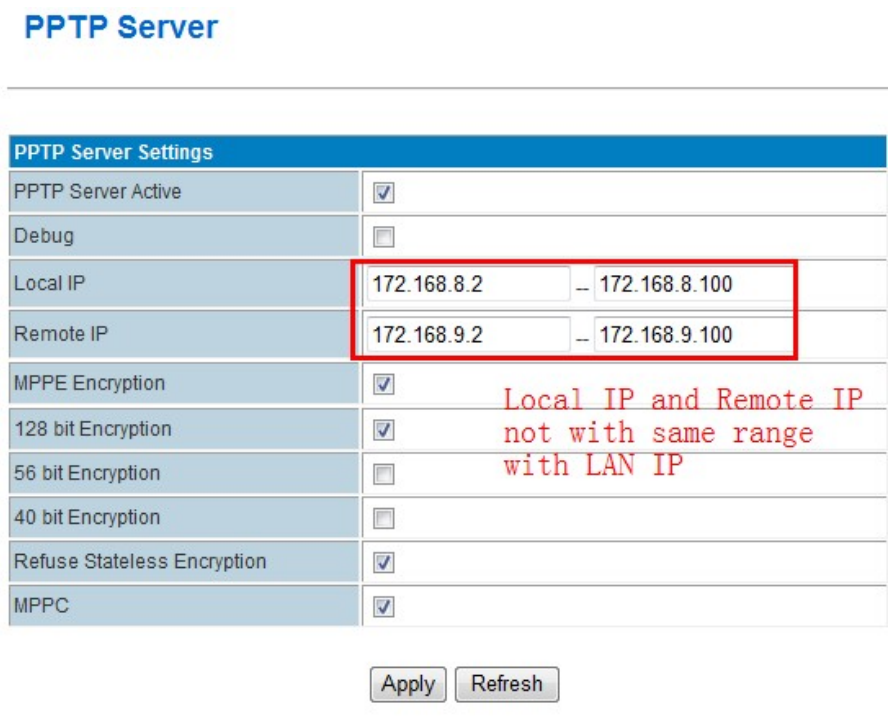
PPTP VPN Settings	
PPTP IP	172.168.8.2
PPTP Remote IP	172.168.9.2
PPTP VPN Active	☑
PPTP User	test
PPTP Password	••••
PPTP Server	14.16.28.235
Remote Lan/Mask	192.168.9.0 / 255.255.255.0
Local PPTP IP	DHCP IP
MPPE Encryption	☑
40 Bit Encryption(Default is 128 Bit)	☑
56 Bit Encryption	☐
Refuse Stateless Encryption	☐
MPPC	☑



2) PPTP Server

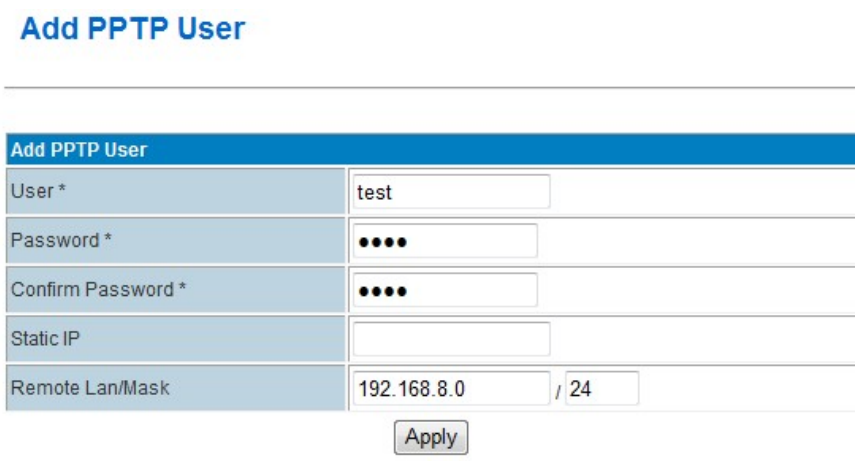
Step1) make the H685/H820 router online with WAN IP (public IP);
Step2) H685/H820 router web -- VPN -- PPTP Server;

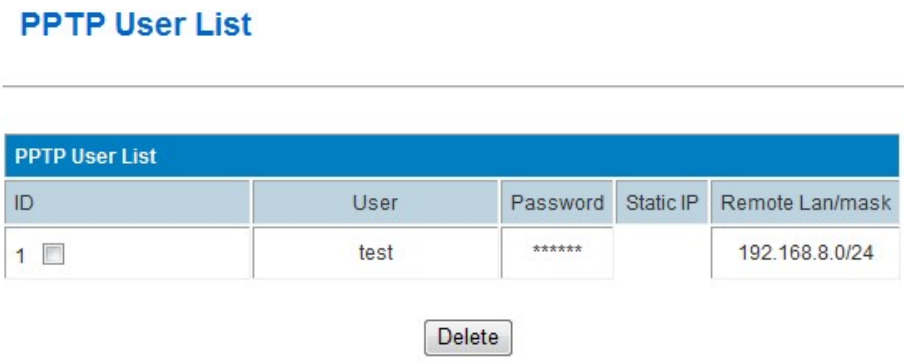
Fill in the related parameters.



Local IP is the VPN IP for the H685/H820 Server.
Remote IP is the VPN IP for the PPTP Client.

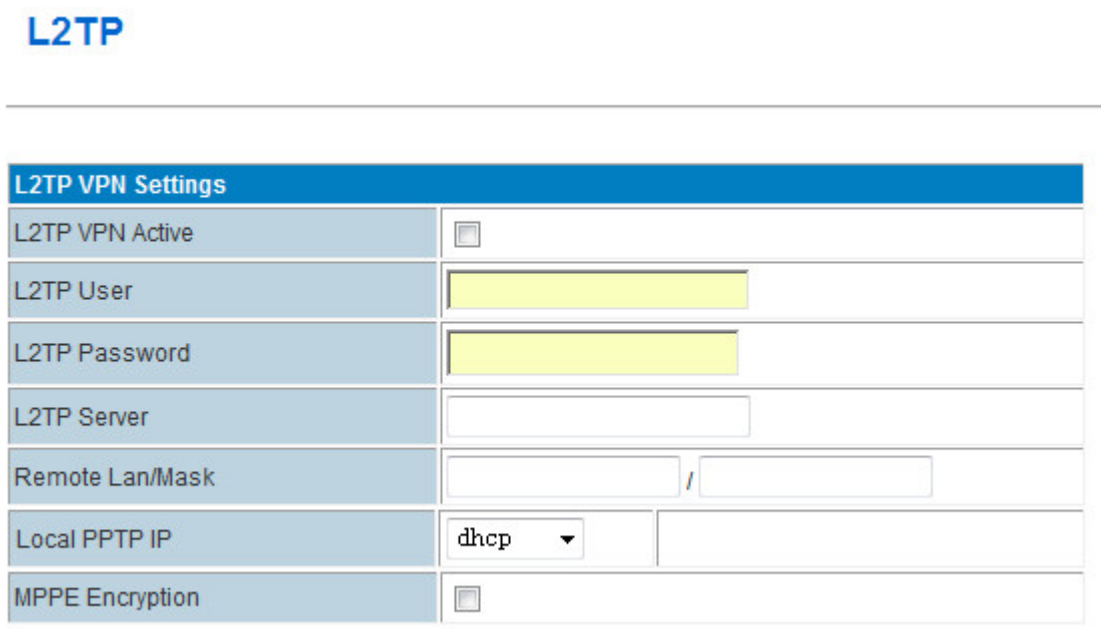
Step3) Add PPTP users for PPTP client;





Step4) At PPTP client side, fill in the PPTP Server IP, PPTP user and password to connect the PPTP Server.

3.3.7.3 L2TP



L2TP feature works as Client only.

Notes:
Normally L2TP server has route for 192.168.1.1/24 or 192.168.0.1/24. Please check the L2TP server has the route of 192.168.8.0/24 if your H820 router is with IP 192.168.8.1.

For example, if H820 LAN IP is 192.168.8.1 and assigned L2TP IP is 172.1.1.2. Then at the L2TP server, need add a route for 192.168.8.0/24 and gateway as 172.168.1.2. Meanwhile, we suggest L2TP Server use fixed L2TP IP rule for L2TP client, otherwise need modify the route's gateway every time because the L2TP client gets a random L2TP IP.

Typical Application (1) E-Lins Router as L2TP Client --- Connects --- E-Lins Router as L2TP Server:
Once L2TP setup, the two E-Lins router will add the route themselves automatically.

Typical Application (2) E-Lins Router as L2TP Client --- Connects --- Other Router/Windows as L2TP Server:
Once L2TP setup, the E-Lins router will add the route itself automatically. But the L2TP Server will not add the route automatically. So need manually add it.

Typical Application (3) Mobile Phone/Portable Devices as L2TP Client --- Connects --- E-Lins Router/Windows/Other Router as L2TP Server:
No need add the route.

3.3.7.4 Tunnel

Tunnel Feature

The H820 Tunnel feature supports two GRE.

GRE1

GRE VPN Settings	
GRE VPN Active	☐
Remote Address *	
Local Address	
Local lan gateway *	
Remote Lan/Mask *	/

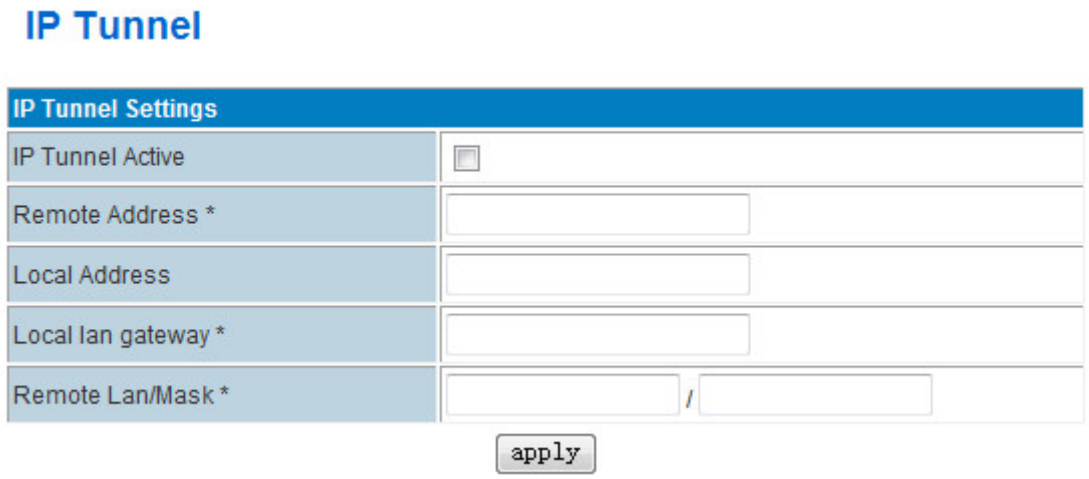
apply

GRE2

GRE VPN Settings	
GRE VPN Active	☐
Remote Address *	
Local Address	
Local lan gateway *	
Remote Lan/Mask *	/

apply

IP Tunnel Feature

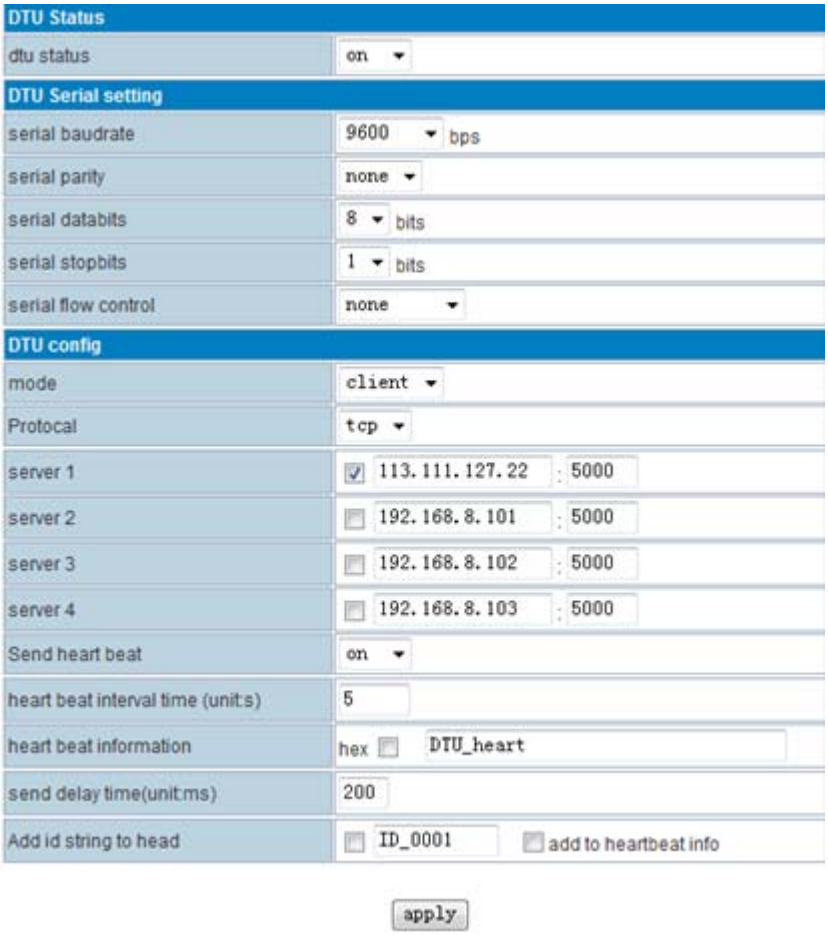


3.3.8 DTU Settings (Serial to Cellular Gateway Feature)

Notes:

1) this feature is for H685 with DTU option only.

2) this feature cannot be used same time with “Connect Modem”. Please disable the “DTU” feature if use “Connect Modem” feature. Please disable the “Connect Modem” feature if use “DTU” feature.



This section is mainly about DTU settings.

- **DTU status:** open and close DTU

DTU Serial setting

- **serial baudrate:** support 300/1200/2400/4800/9600/19200/38400/57600/115200bps
- **serial parity:** support none/odd/even
- **serial databits:** support 7 bits and 8 bits
- **serial stopbit:** support 1 bits and 2 bits
- **serial flow control:** support hardware/software

DTU config

- **mode:** can configure as client or server.
- **Protocol:** support TCP/UDP
- **server 1~server 4:** fill in the centre server IP or Domain name and port. If you configure one server, the data will transfer to this server. If you configure one more servers, the data will transfer to all the servers at the same time.
- **Send heart beat:** open or close heart beat.
- **heart beat interval time:** set interval time to send each heart beat
- **heart beat information:** define the content of heart beat
- **send delay time:** send waiting time to send data.

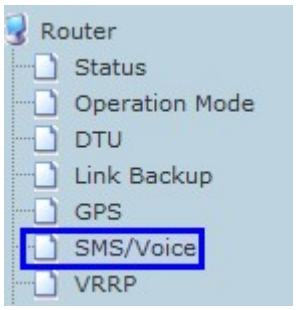
- **Add id string to head:** add an ID string in the data or heartbeat.

3.3.9 SMS/Voice Control

Notes: this feature is for H820 with SMS/Voice option only.

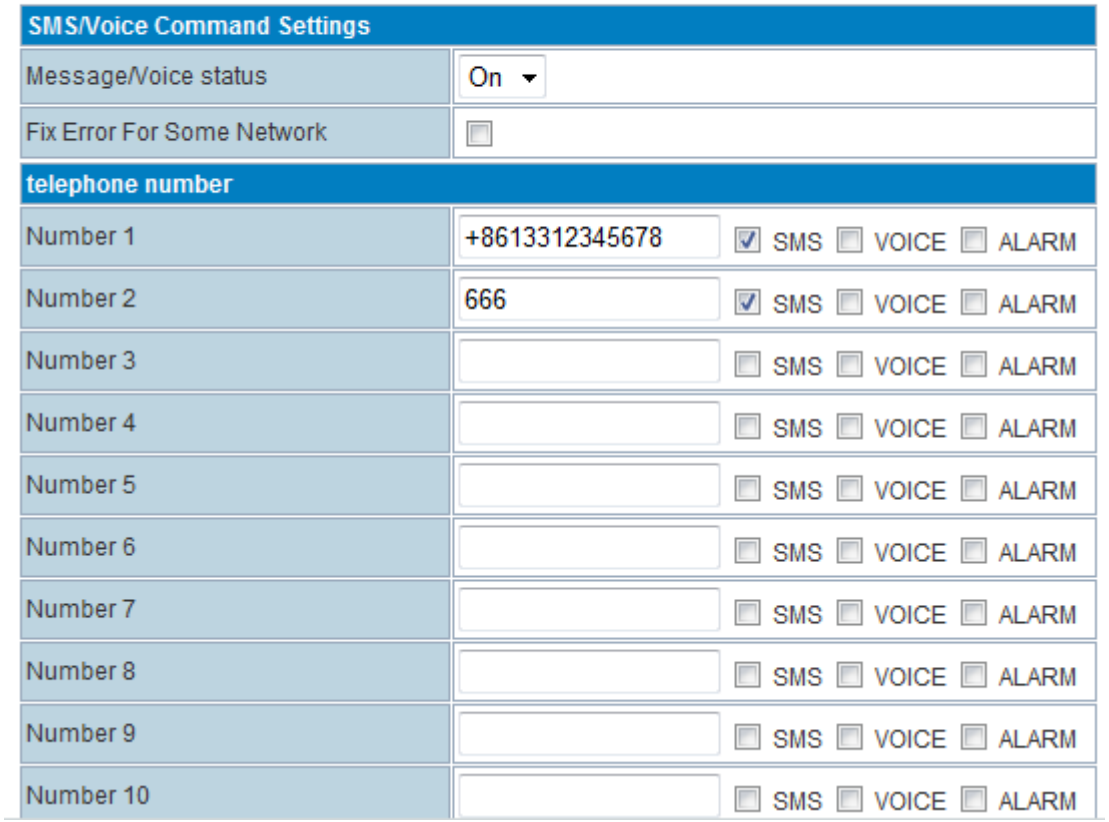
3.3.9.1 SMS

Step 1) click "SMS/Voice"



Step 2) Activate the SMS feature

SMS/Voice Settings



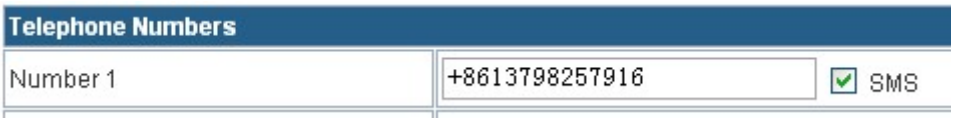
Message/Voice status: select “on” to enable SMS feature. “off” to disable SMS feature.
Fix Error For Some Network: Some networks use different code format. Please keep uncheck to try. If not work, try to check it.
Telephone number: Sender’s phone number input. Totally can input 10 groups.
Number 1….10: input the dedicated sender’s phone number. Do not forget to Tick “SMS”
Step 3) Define the SMS command

SMS	
SMS Command	on
Send ack SMS	on
Reboot Router Command	reboot
Get Cell Status Command	cellstatus
Cell link-up Command	cellup
Cell link-down Command	celldown
DIO_0 Set Command	dio01
DIO_0 Reset Command	dio00
DIO_1 Set Command	dio11
DIO_1 Reset Command	dio10
DIO Status Command	diostatus

SMS Command: select “on” to enable it. “off” to disable it.
Send ack SMS: If select “on”, the router will send command feedback to sender’s phone number. If select “off”, the router will not send command feedback to sender’s phone number.
Reboot Router Command: input the command for “reboot” operation, default is “reboot”.
Get Cell Status Command: input the command for “router cell status checking” operation, default is “cellstatus”. For example, if we send “cellstatus” to router, router will feedback the status to sender such as “Router SN: 086412090002 cell_link_up”, which indicated the router SN number and Cell Working Status.
Cell link-up Command: input the command for “router cell link up” operation, default is “cellup”. If router gets this command, the Router Cell will be online.
Cell link-down Command: input the command for “router cell link down” operation, default is “celldown”. If router gets this command, the Router Cell will be offline.
DIO_0 Set Command: input the command for I/O port 0. For SMS feature, please keep the parameter default.
DIO_0 Reset Command: input the command for I/O port 0. For SMS feature, please keep the parameter default.
DIO_1 Set Command: input the command for I/O port 1. For SMS feature, please keep the parameter default.
DIO_1 Reset Command: input the command for I/O port 1. For SMS feature, please keep the parameter default.
DIO Status Command: input the command for I/O port status. For SMS feature, please keep the parameter default.

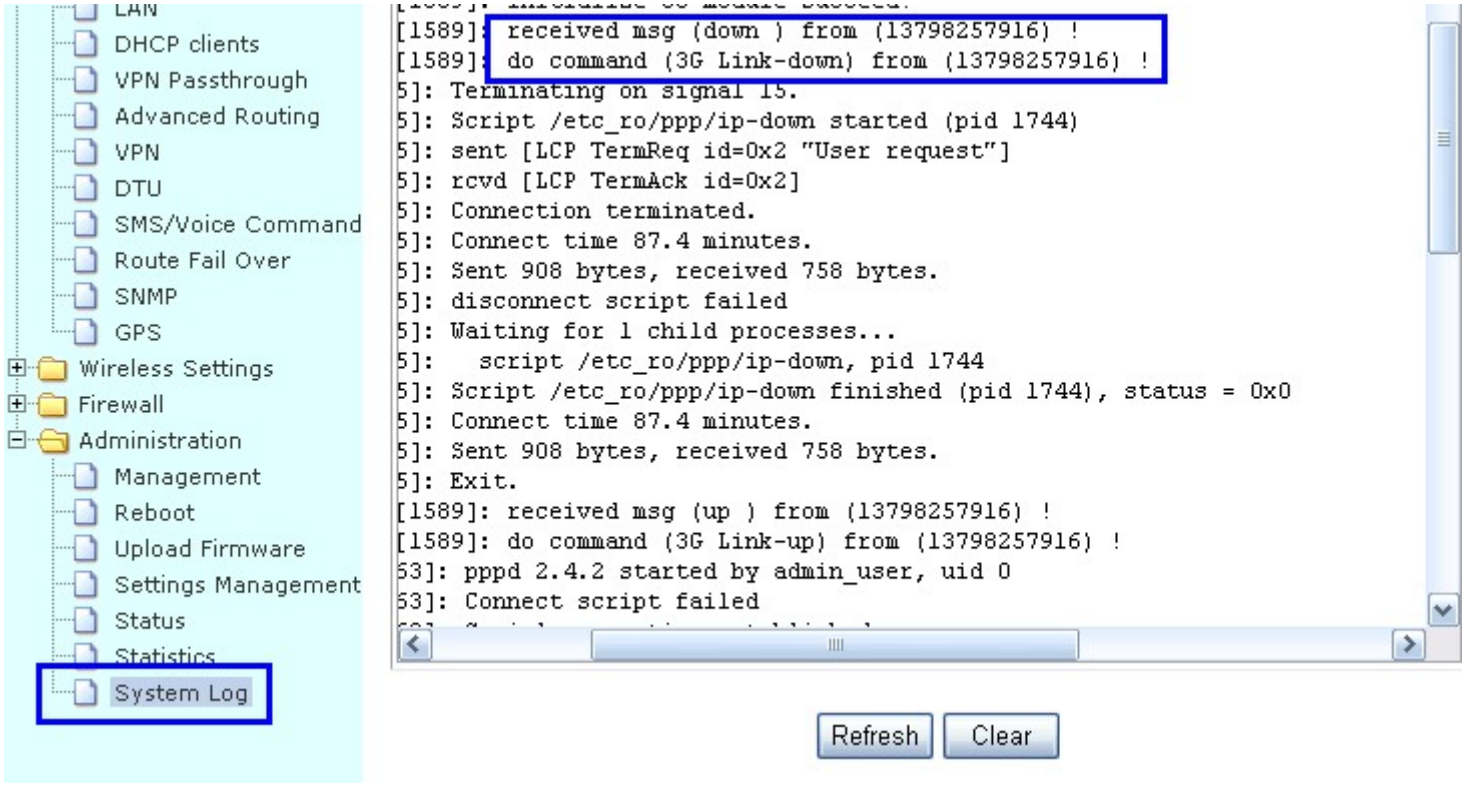
Step 4) Click apply **button to save**

Note:
1) SIM Card inserted in the router must support SMS or Voice.
2) Try to add zone code or country code if the command cannot get working.
For example, we set the number 13798257916, and if the command cannot work, please try to put the country code 86 as followed picture.

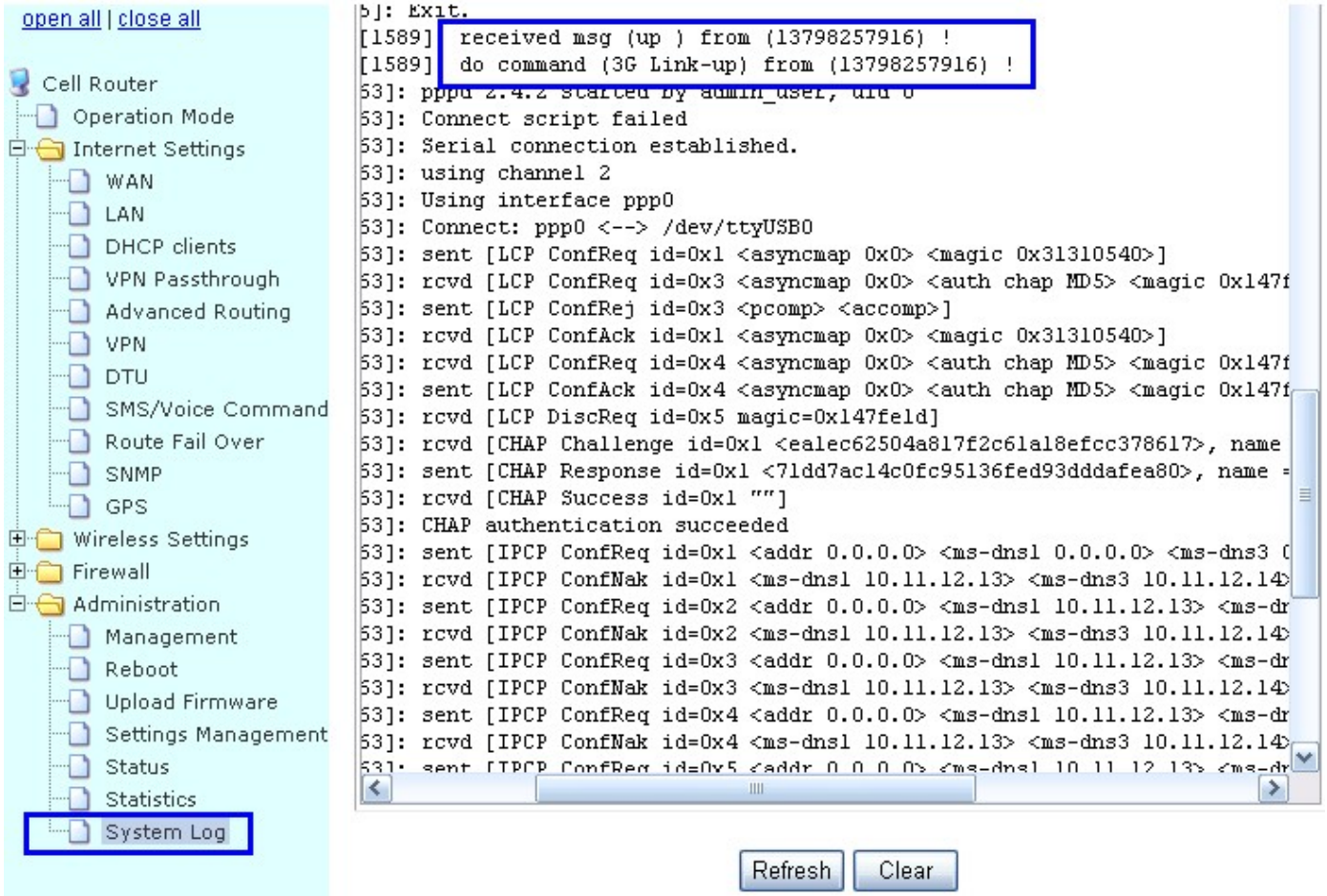


Here set an example, we set the parameters for SMS/Voice as above.

1) Use the cell phone 13798257916 to send “down” to the router’s SIM Card Number, the router will receive the “down” command, and it will be off-line. And in the System Log, we shall find a info as following marks.



2) Use the cell phone 13798257916 to send “up” to the router’s SIM Card Number, the router will receive the “up” command, and it will be online. And in the System Log, we shall find a info as following marks.



3.3.9.2 Voice

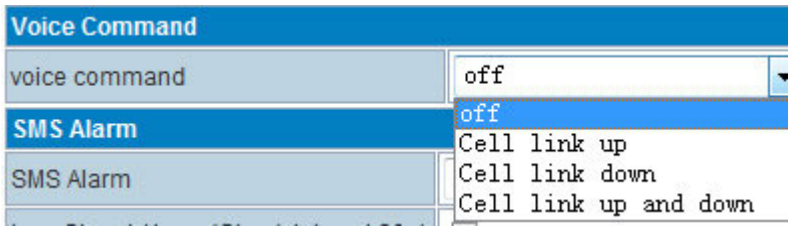
Notes: This feature may not work due to network compatibility or module modem.

Step 1) enable voice feature

Step 2) set the dedicated phone number for voice control

telephone number		
number 1	13798257916	SMS ☑ VOICE ☐ ALARM
number 2		SMS ☐ VOICE ☐ ALARM
number 3		SMS ☐ VOICE ☐ ALARM
number 4		SMS ☐ VOICE ☐ ALARM
number 5		SMS ☐ VOICE ☐ ALARM
number 6		SMS ☐ VOICE ☐ ALARM
number 7		SMS ☐ VOICE ☐ ALARM
number 8		SMS ☐ VOICE ☐ ALARM
number 9		SMS ☐ VOICE ☐ ALARM
number 10		SMS ☐ VOICE ☐ ALARM

Step 3) Configure the voice command



- **off:** disable the voice control
- **Cell link up:** with this selection, the voice control can only control the Router Cell online.
- **Cell link down:** with this selection, the voice control can only control the Router Cell offline.
- **Cell link up and down:** with this selection, the voice control can control the Router Cell offline and online. 1st control to be online, 2nd control to be offline.

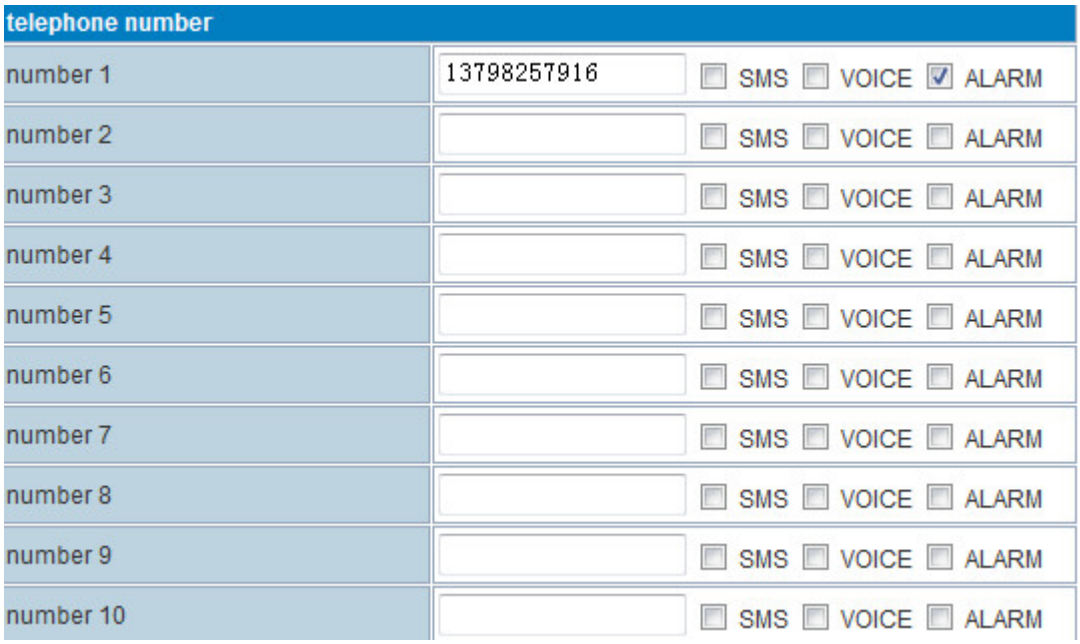
3.3.9.3 Alarm via SMS

With this feature, the Router will send SMS to pre-defined phone number for warning and alarm.

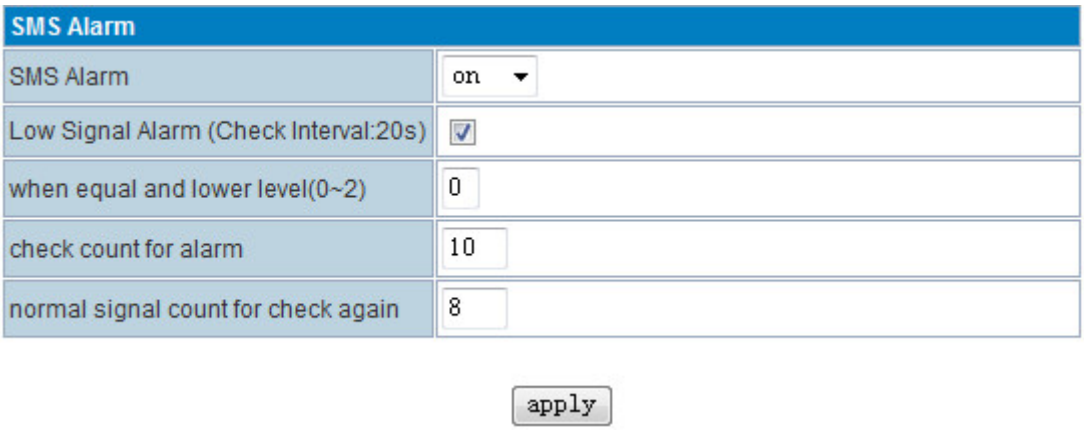
Step 1) enable Alarm feature

SMS/Voice Command Settings	
Message/Voice status	on

Step 2) set the dedicated phone number for SMS Alarm



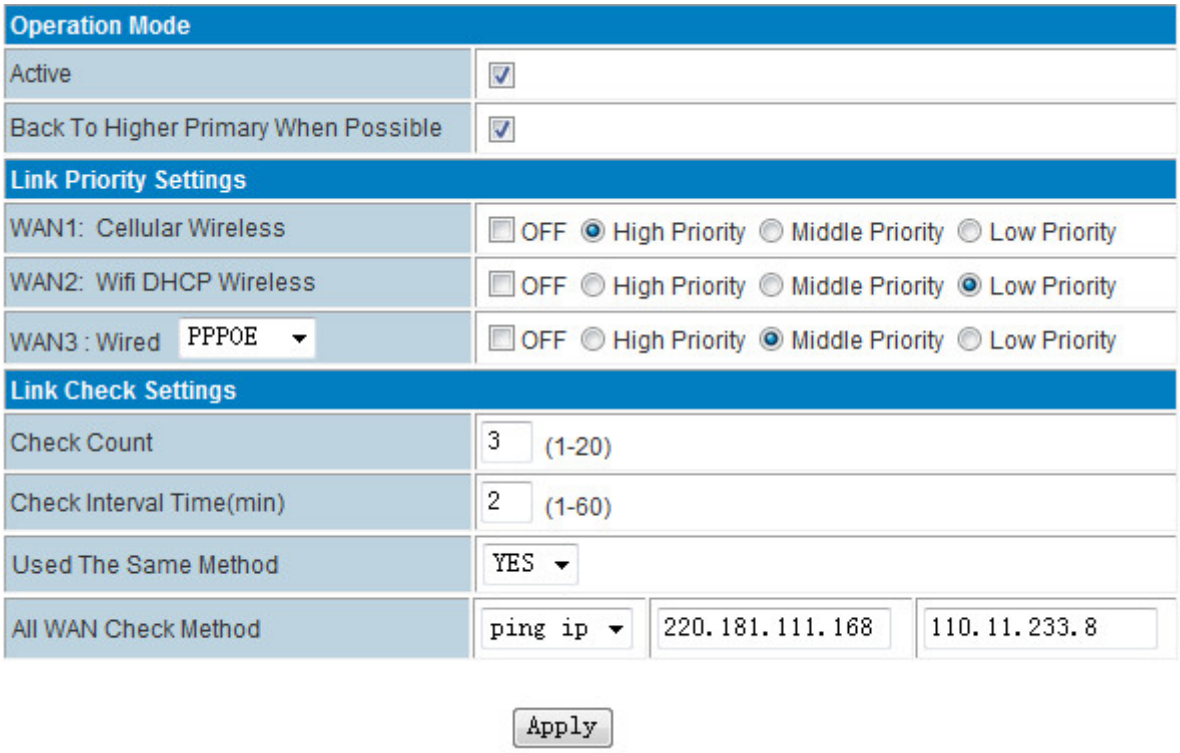
Step 3) Configure the voice command



normal signal count for check again: to prevent repeating alarm.

With the setting above, the H820 router checks signal every 20s, if all of 10 times with signal 0 quality, H820 Router will send Alarm via SMS. After the alarm, this feature will be locked, but H820 Router keeps checking signal quality every 20s, if continuous 8 times are with signal quality better than 0, the alarm feature will be unlocked, then the alarm feature starts work again.

3.3.10 Link Backup (Route Redundancy)



Operation Mode

- **Active:** disable or enable the link redundancy
- **Back to Higher Primary When Possible:**
  If you tick this option, once the H820 Router work on backup link, whether it fails or not, it will return to main link if main link turns to be okay.
  If not tick this option, the H820 Router will not return to main link until the current link fails.

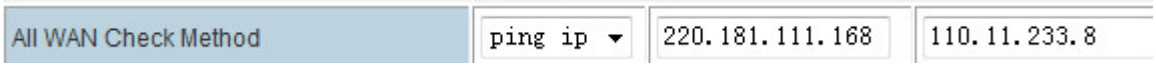
Link Priority Settings

- **WAN1: Cellular Wireless**
- **WAN2: WiFi DHCP Wireless**
- **WAN3: Wired XXX (XXX=DHCP, STATIC, PPPOE)**

OFF: Check *OFF Blank* to disable or uncheck to enable the link redundancy
Priority*:* High Priority, Middle Priority, Low Priority.

Link Check Settings

- **Check Count:** for example, set it as 3. Router check link live 3 times.
- **Check Interval Time(min):** for example, set is as 2. Router check link live every 2 minutes.
- **Used The Same Method:**
  If set it as *YES*, WAN1/WAN2/WAN3 use same check IP or domain name from *ALL WAN Check Method*.



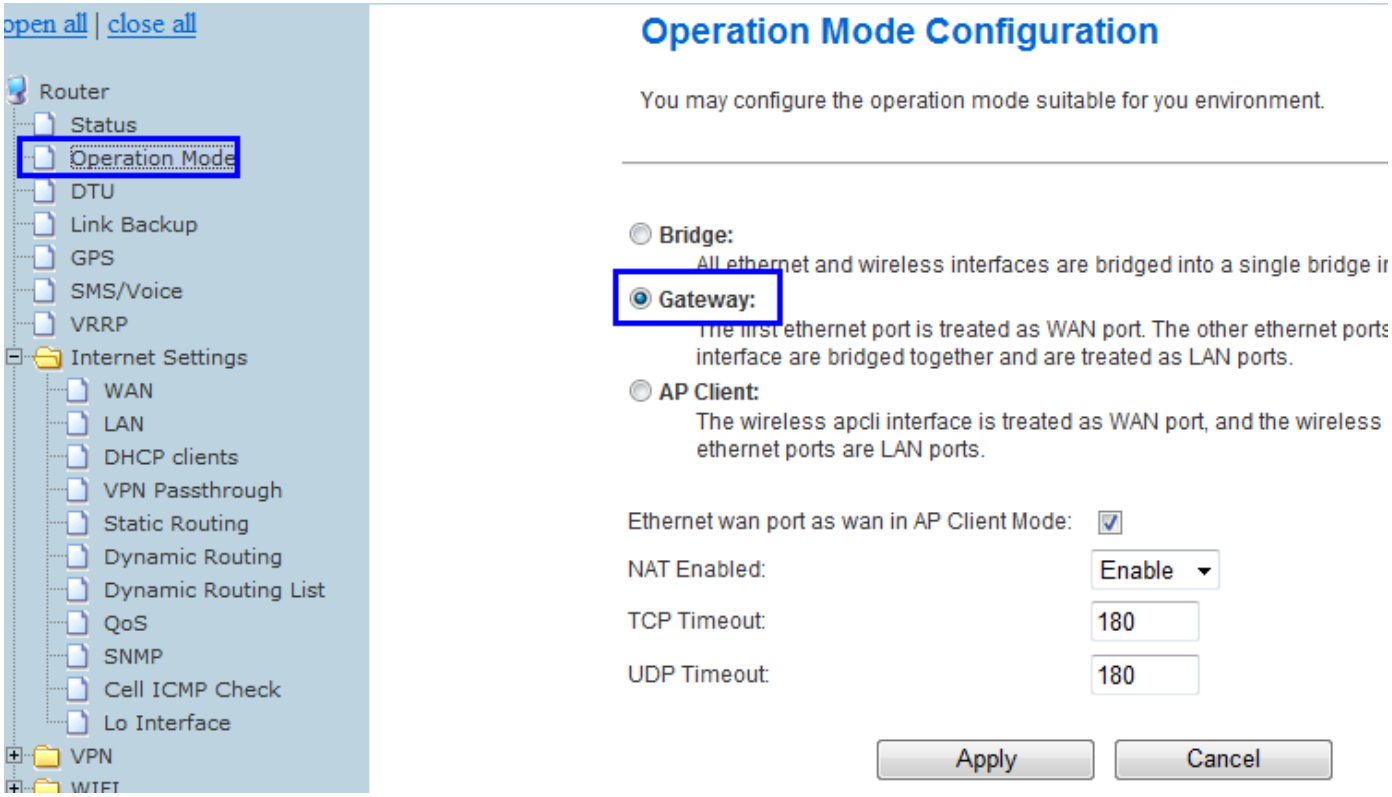
If set is as *NO*, users need set WAN1/WAN2/WAN3 live check IP or domain name separately.

Used The Same Method	NO		
WAN1 Check method	ping ip	google.com	118.113.114.2
WAN2 Check method	ping ip	163.com	222.113.114.28
WAN3 Check method	ping ip	8.8.8.8	112.113.114.222

- **All WAN Check Method:** define the link live check IP or domain name.

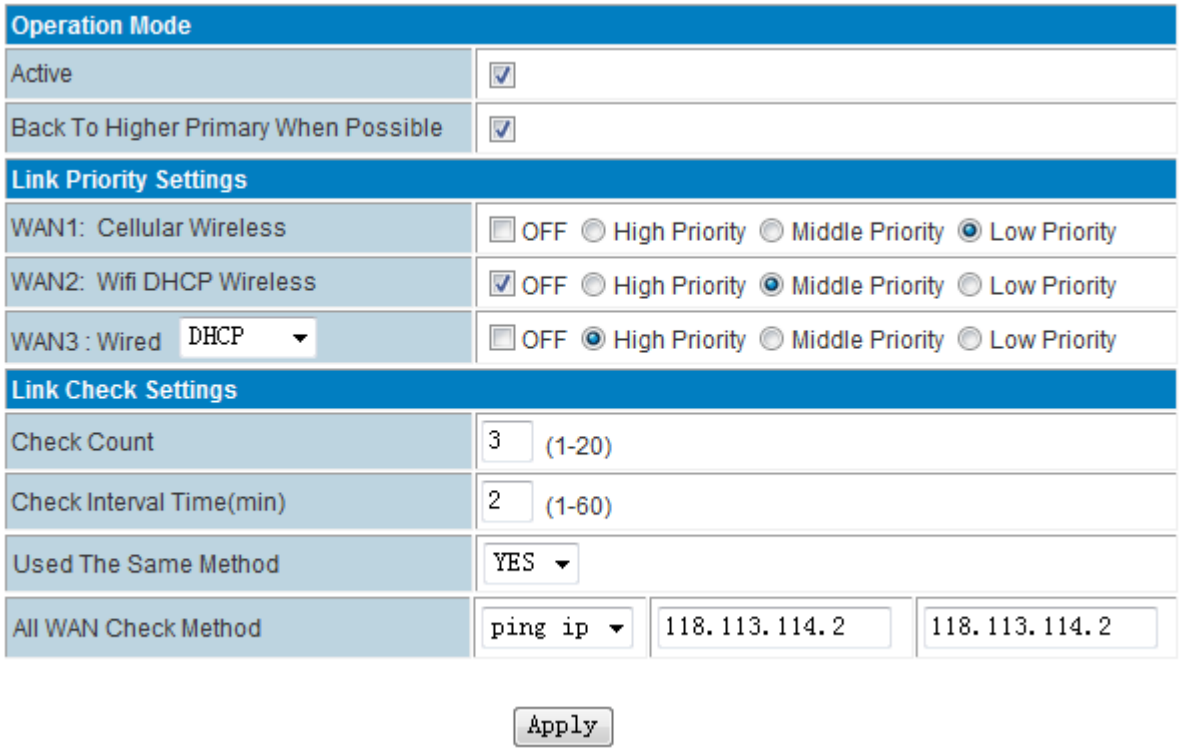
How to use *Link Backup* feature? Here set an example as follows,
H820 WAN RJ45 connects to upper side router LAN RJ45.

Confirm the upper side router connects to internet, and its DHCP is working.
First, Set H820 work mode as default “Gateway mode”.

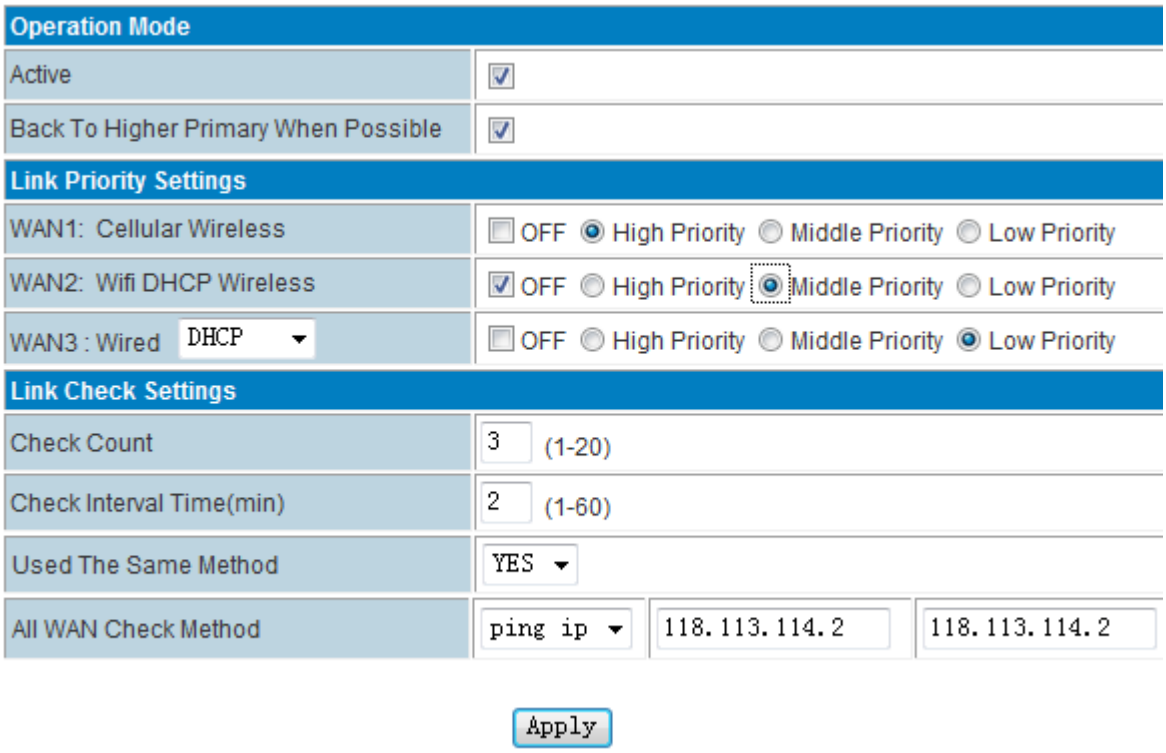


Step 1) activate it. Tick “Active”
Step 2) click at “Back To Higher Primary When Possible”
Step 3) Choose the network priority.

A. Cellular as Low Priority, DHCP as High Priority
With this configuration, the router will work at DHCP mainly, and if DHCP is failed, it switches to cellular automatically after some time. And it will automatically switch to DHCP when DHCP is fixed.

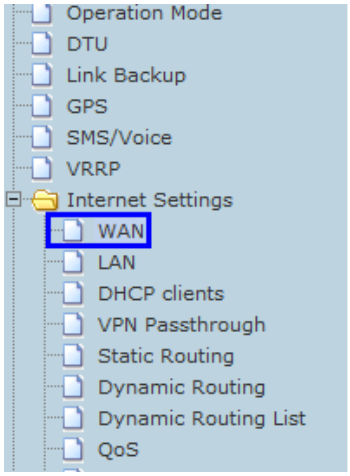


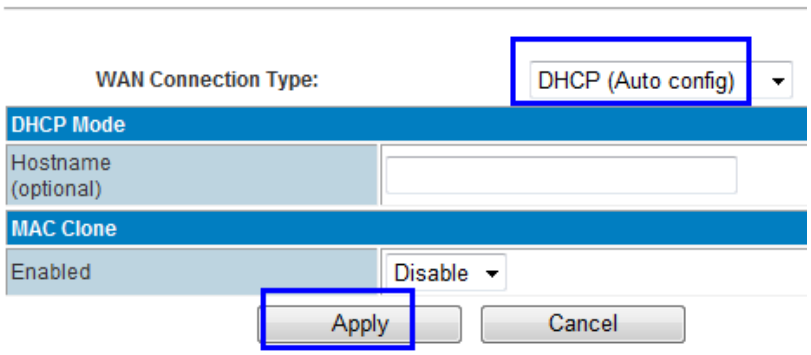
B. Cellular as High Priority, DHCP as Low Priority
With this configuration, the router will work at cellular mainly, and if cellular is failed, it switches to DHCP automatically after some time. And it will automatically switch to cellular when cellular is fixed.



DHCP: here can be DHCP WiFi Client.

Step 4) if Step 3 choose A, please set WAN as *DHCP* and click “Apply”





The H820 gets WAN IP and default gateway from the up-side router.

Product Model	3G Router
Software Version	2.4.6 (Aug 5 2011)
Hardware Version	1.0.0
Device ID	280230312C080435
System Up Time	36 mins, 15 secs
Operation Mode	Gateway Mode
3G Info	
Signal Strength	27 , (0-31)
Attachment State	CDMA/EVDO HYBRID
Local Network	
Local IP Address	192.168.8.1
Local Netmask	255.255.255.0
MAC Address	00:0C:43:30:52:77
Internet Configurations	
Connected Type	DHCP
WAN IP Address	192.168.0.104
Subnet Mask	255.255.255.0
Default Gateway	192.168.0.1
Primary Domain Name Server	192.168.0.1
Secondary Domain Name Server	
MAC Address	00:0C:43:30:32:12

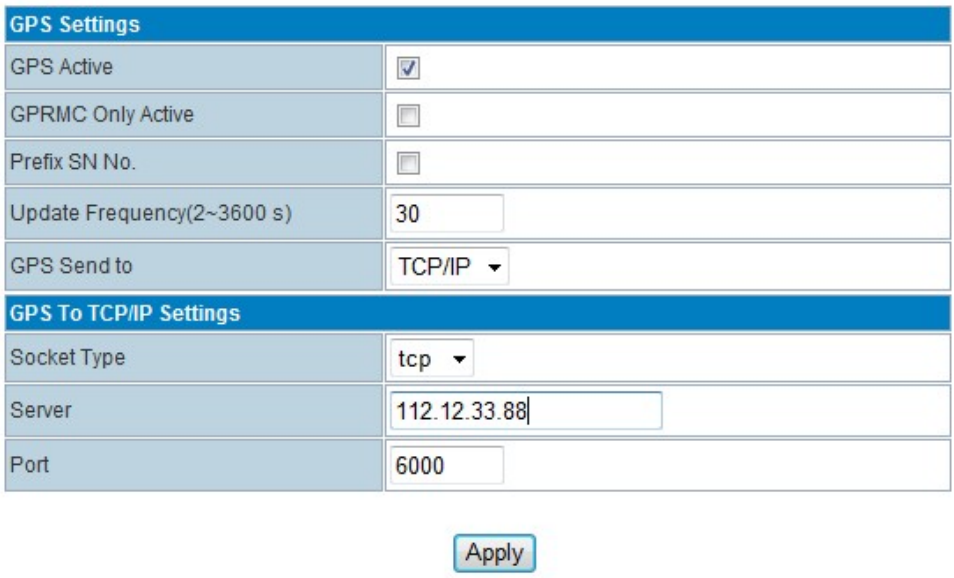
If Step 3 choose B, set WAN as *CELL NETWORK* and click “Apply”, it will work on cellular first, and switch to LAN RJ45 cable WAN or WiFi client mode if cellular network is failed.

Notes: for route fail over feature, please first make the main network and backup network both work before activate the fail over feature.

3.3.11 GPS

Notes: GPS feature is for H820 router with GPS option only.

GPS



- **GPS Active**: please check it once you need use GPS feature.
- **GPRMC Only Active:** if check it, only send GPRMC data info (Longitude Latitude altitude)
- **Prefix SN No.:** if check it, add the router SN to the data packet
- **Update Frequency (2~3600s) :** configure the frequency time of updated GPS data packet sending
- **GPS Send to**: Choose “Serial” or “TCP/IP” method. The router only receives the GPS signal, will not process it. It will just send the received GPS signal to your GPS processor devices or servers.
  If the GPS processor device is connected to the H685 Router via Serial Port, please choose “Serial”.
  If the GPS processor device is a remote server, please choose “Serial”.

➢ **GPS to TCP/IP Settings**

GPS Settings	
GPS Active	☑
GPRMC Only Active	☐
Prefix SN No.	☐
Update Frequency(2~3600 s)	30
GPS Send to	TCP/IP
GPS To TCP/IP Settings	
Socket Type	tcp
Server	112.12.33.88
Port	6000

Apply

- **Sock type:** tcp or udp
- **Server:** fill in the correct destination server IP or domain name
- **Server port:** fill in the correct destination server port

➢ **GPS to Serial Settings**

GPS Settings	
GPS Active	☑
GPRMC Only Active	☐
Prefix SN No.	☐
Update Frequency(2~3600 s)	30
GPS Send to	Serial
GPS To Serial Settings	
Serial Baudrate	115200 bps
Serial Parity	none
Serial Databits	8 bits
Serial Stopbits	1 bits
Serial Flow Control	none
Notes: DTU feature and 'GPS Send to Serial' cannot use at the same time.	

Apply

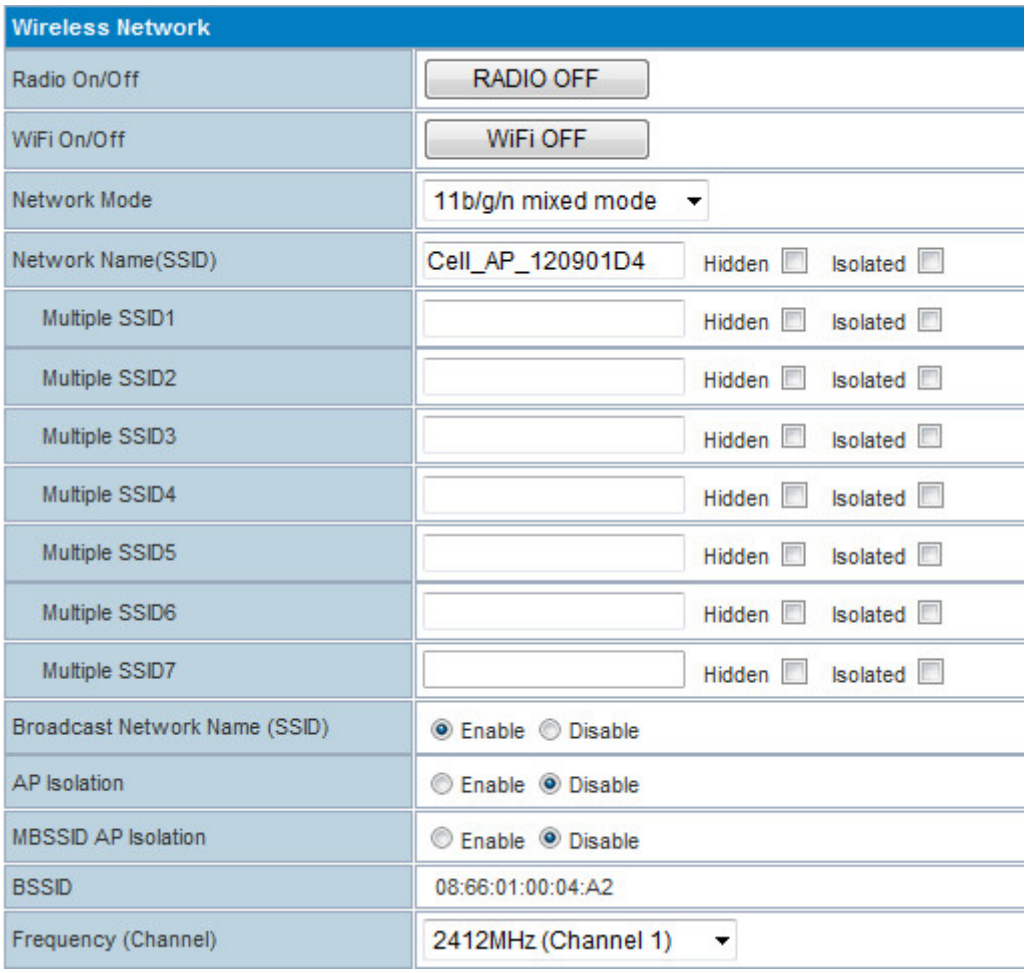
- **serial baudrate:** 9600/19200/38400/57600/115200bps for choice

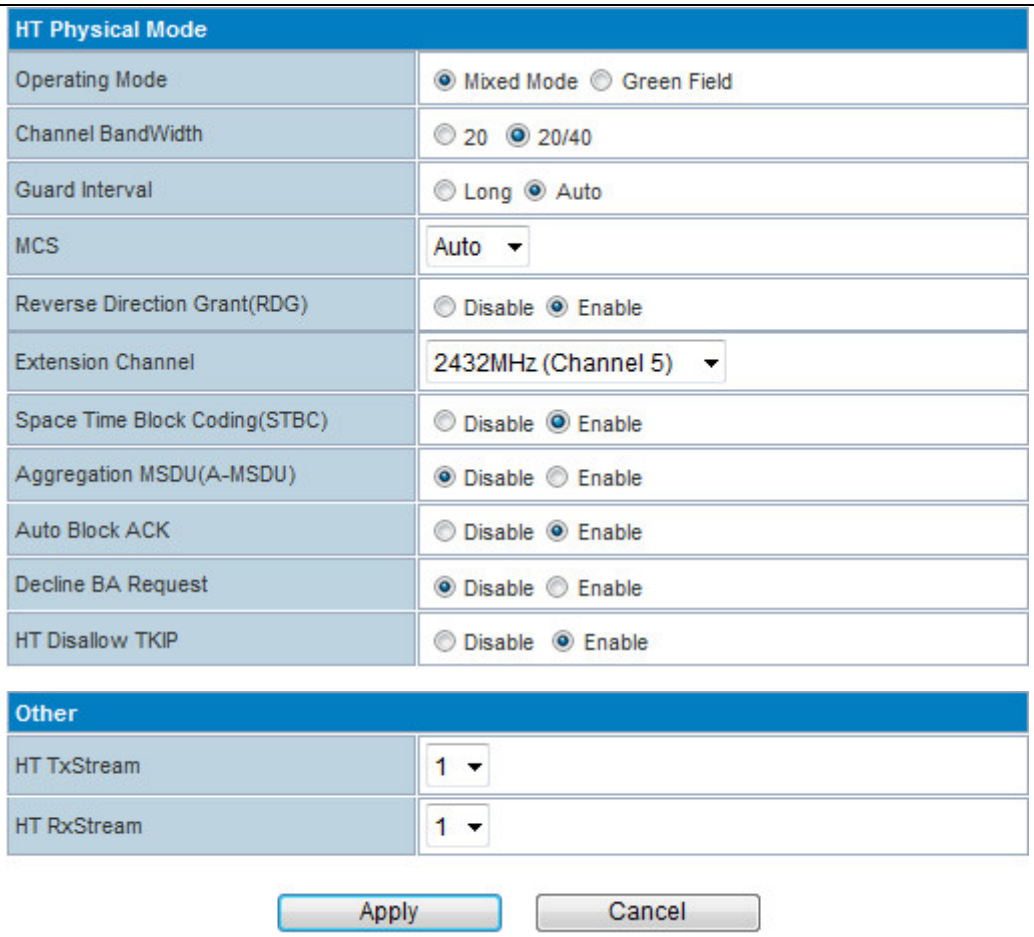
- **serial parity:** none/odd/even for choice
- **serial databits:** 7/8 for choice
- **serial stopbits:** 1/2 for choice
- **serial flow control:** none/hardware/software for choice

3.3.12 WiFi Wireless Settings

Notes: WiFi Feature is H820 with WiFi only

3.3.12.1 Basic Wireless Settings





HT Physical Mode	
Operating Mode	Mixed Mode / Green Field
Channel BandWidth	20 / 20/40
Guard Interval	Long / Auto
MCS	Auto
Reverse Direction Grant(RDG)	Disable / Enable
Extension Channel	2432MHz (Channel 5)
Space Time Block Coding(STBC)	Disable / Enable
Aggregation MSDU(A-MSDU)	Disable / Enable
Auto Block ACK	Disable / Enable
Decline BA Request	Disable / Enable
HT Disallow TKIP	Disable / Enable

Other	
HT TxStream	1
HT RxStream	1

Apply Cancel

- **Wireless Network**
- **Radio On/Off:** If it indicates *RADIO OFF*, it means the radio is on. You can click *RADIO OFF* to disable it. If it indicates *RADIO ON*, it means the radio is off. You can click *RADIO ON* to enable it.
- **WiFi On/Off:** If it indicates *WiFi OFF*, it means the radio is on. You can click *WiFi OFF* to disable it. If it indicates *WiFi ON*, it means the radio is off. You can click *WiFi ON* to enable it. If WiFi is ON, the WiFi LED will be light on. If WiFi is OFF, the WiFi LED will be off.
- **Network Mode:** 802.11b/g/n mode selection
- **Network Name(SSID):** Input the SSID, *Hidden* & *Isolated* for option. If tick *Hidden*, the WiFi SSID will not broadcast.
- **Multiple SSID1:** H820 Router supports multiple SSID 8 groups totally.
- **Broadcast Network Name (SSID)**: Enable or Disable SSID broadcast.
- **BSSID**: indicates the MAC of WiFi
- **Frequency (Channel):** current working frequency and channel.

3.3.12.2 WiFi Advanced Settings

Advanced Wireless	
BG Protection Mode	Auto
Beacon Interval	100 ms (range 20 - 999, default 100)
Data Beacon Rate (DTIM)	1 ms (range 1 - 255, default 1)
Fragment Threshold	2346 (range 256 - 2346, default 2346)
RTS Threshold	2347 (range 1 - 2347, default 2347)
TX Power	100 (range 1 - 100, default 100)
Short Preamble	Enable Disable
Short Slot	Enable Disable
Tx Burst	Enable Disable
Pkt_Aggregate	Enable Disable
IEEE 802.11H Support	Enable Disable(only in A band)
Country Code	None

Wi-Fi Multimedia	
WMM Capable	Enable Disable
APSD Capable	Enable Disable
DLS Capable	Enable Disable
WMM Parameters	WMM Configuration

3.3.12.3 Wireless Security/Encryption Settings

Select SSID	
SSID choice	Cell AP 120901D4

"Cell AP 120901D4"	
Security Mode	Disable

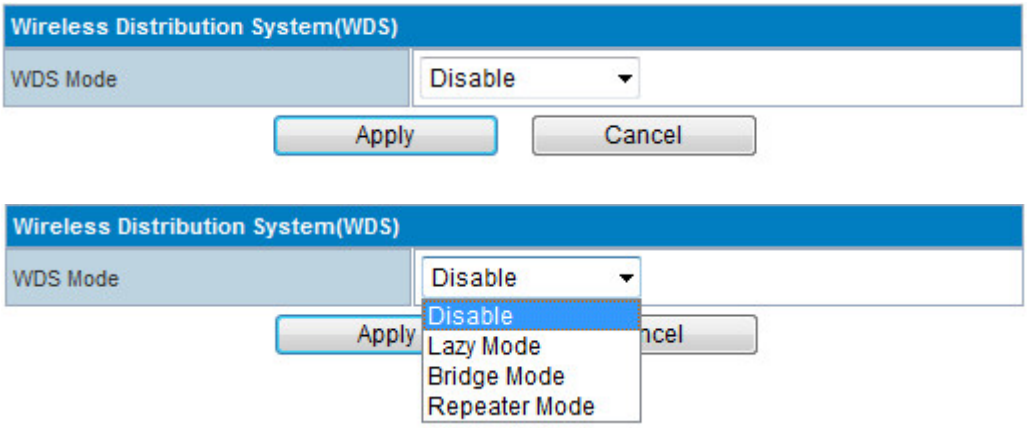
Access Policy	
Policy	Disable
Add a station Mac:	

- **SSID choice:** select the SSID you want to configure
- **Security Mode:** include Disable, OPENWEB, SHAREDWEB, WEBAUTO, WPA, WPA-PSK,

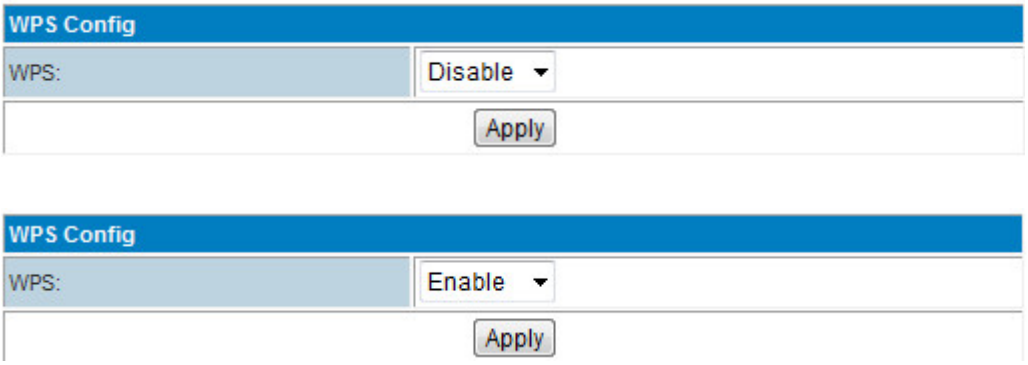
WPA2, WPA2-PSK, wpa-psk/wpa2-psk, wpa1/wpa2, 802.1X.

- **Access policy:** setting the MAC list for access or deny.
  Disable: close the *Access Policy*.
  Allow: allow the assigned MAC enable to use WiFi
  Reject: refuse the assigned MAC enable to use WiFi

3.3.12.4 WDS



3.3.12.5 WPS



3.3.12.6 Station List

Wireless Network							
MAC Address	Aid	PSM	MimoPS	MCS	BW	SGI	STBC

3.3.12.7 Statistics

Transmit Statistics	
Tx Success	9
Tx Retry Count	0, PER=0.0%
Tx Fail after retry	0, PLR=0.0e+00
RTS Sucessfully Receive CTS	0
RTS Fail To Receive CTS	0
Receive Statistics	
Frames Received Successfully	42309
Frames Received With CRC Error	39890, PER=48.5%
SNR	
SNR	n/a, n/a, n/a

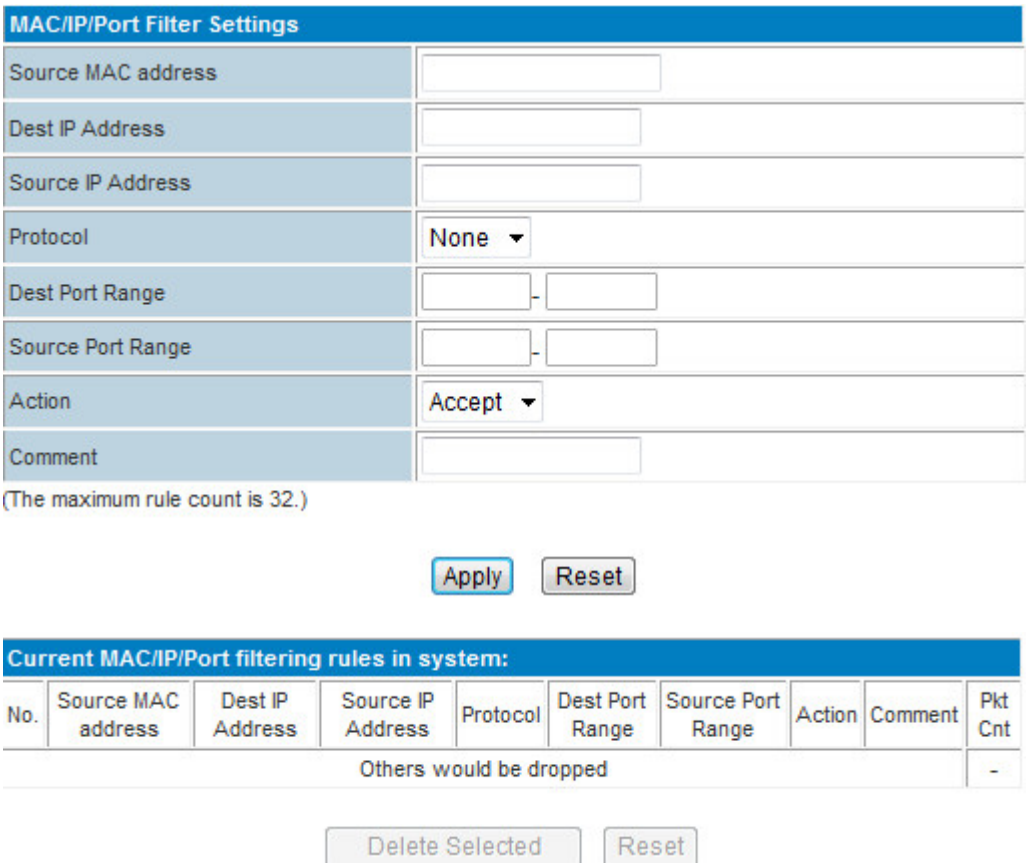
Reset Counters

3.3.13 Firewall

3.3.13.1 MAC/IP/Port Filter Settings

Basic Settings	
MAC/IP/Port Filtering	Disable
Default Policy -- The packet that don't match with any rules would be:	Dropped.

Apply Reset



This section is mainly about MAC/IP/Port filter settings

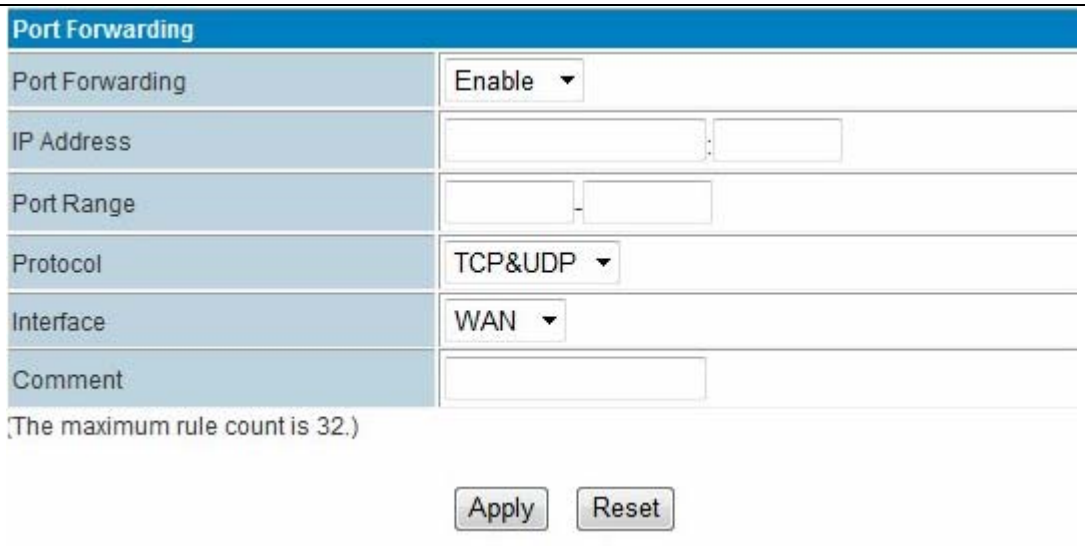
- **Basic Settings**
- **MAC/IP/Port Filtering:** Disable or Enable
- **Default Policy -- The packet that don't match with any rules would be:** Dropped/Accepted

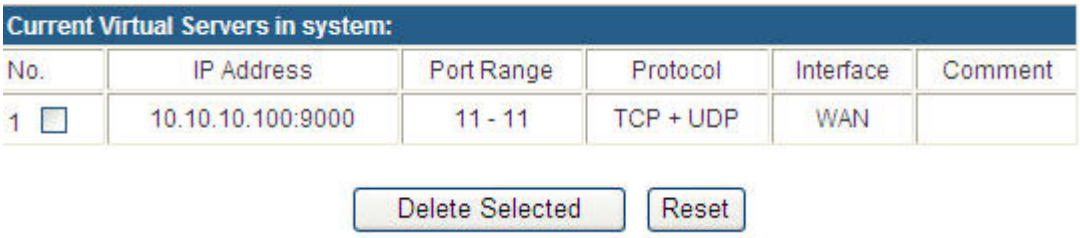
- **MAC/IP/Port Filter Settings**
- **Source MAC address:** Fill the MAC address which needs to filter.
- **Dest IP Address:** IP of the target destination computer(the computer which the data packet will be sent to)
- **Destination Port Range:** port range of target computer
- **Source Port Range:** port range of the computer which sends data
- **Action:** choose *Accept* or *Drop*
- **Comment:** input comment here

- **Current MAC/IP/Port filtering rules in system**

It display the configured rules in this table.

3.3.13.2 Port Forwarding (Virtual Server Settings)(NAT/NAPT)

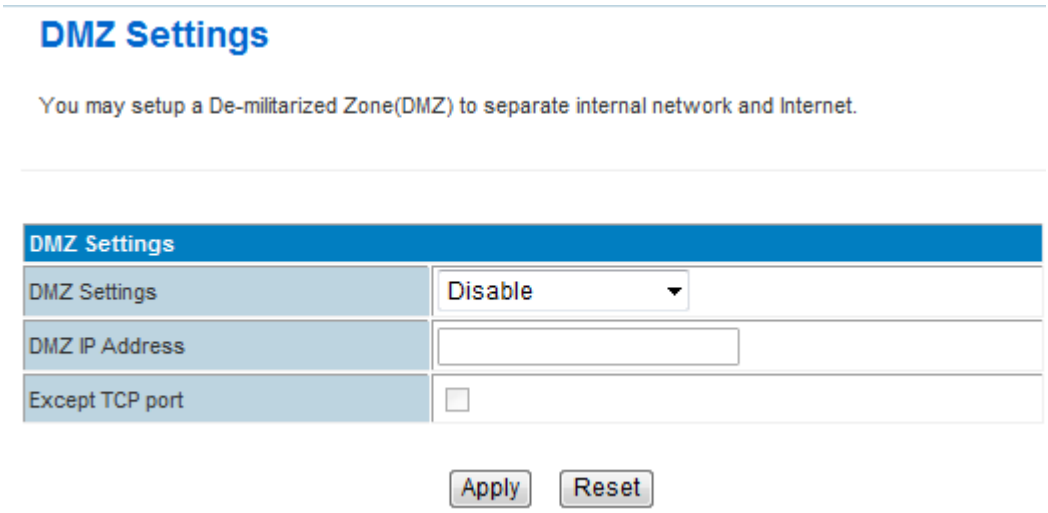




Port forwarding is the process that your router or firewall uses to sort the right kind of network data to the right port. Computers and routers use ports as a way to organize network data. Different types of data, such as web sites, file downloads, and online games, are each assigned a port number. By using port forwarding, the router or firewall sends the correct data to the correct place.

- Port Forwarding: Enable and disable the feature.
- IP address: fill the IP address of forwarding. The first blank is for local IP address, the second blank is for port.
- Port Range: fill the External Port of forwarding.
- Protocol: TCP&UDP, TCP only, UDP only for choice
- Interface: Recommend to select “WAN”
- Comment: fill in comment for the rules.

3.3.13.3 DMZ Host

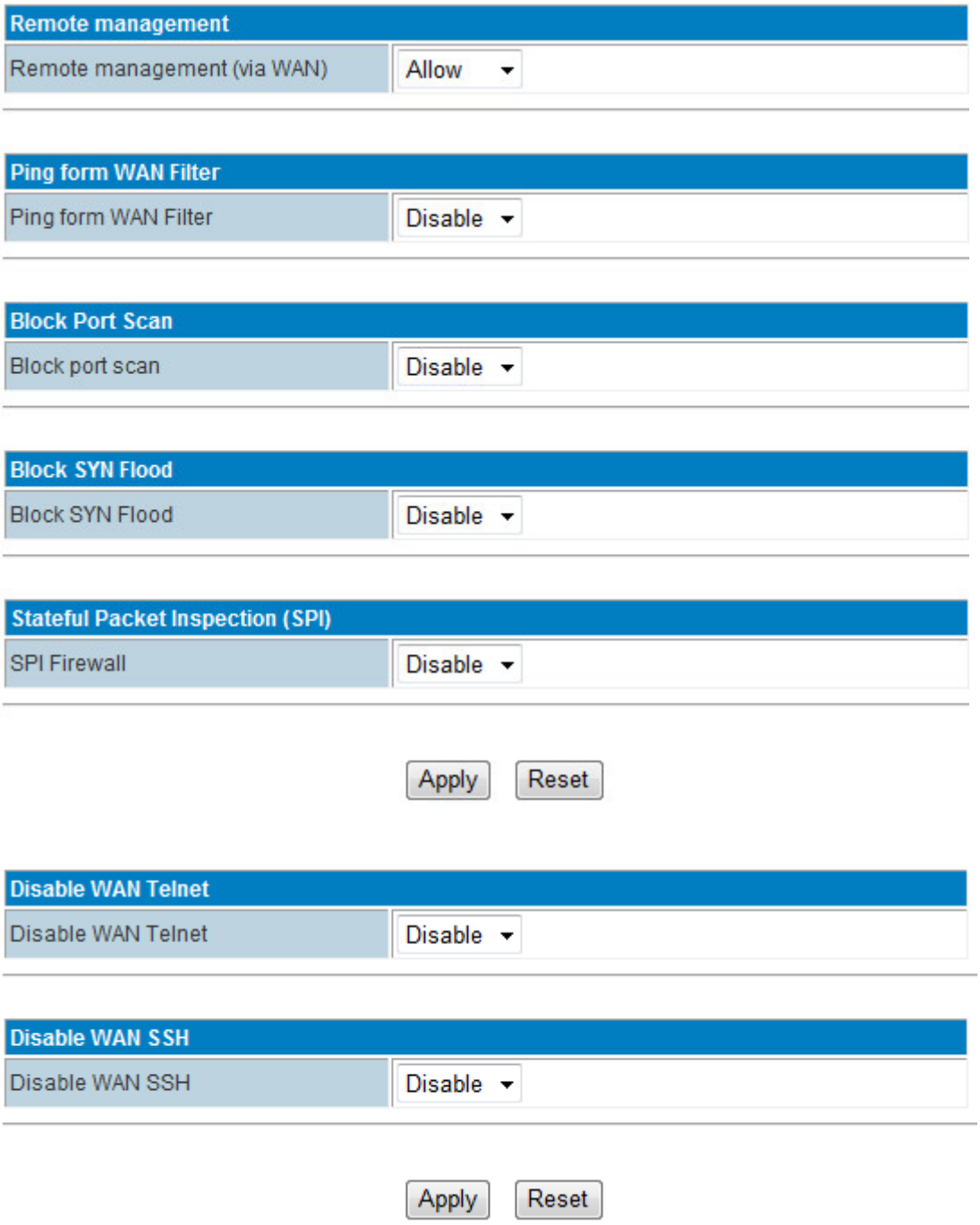


In computer networking, DMZ is a firewall configuration for securing local area networks (LANs).

- **DMZ Settings**: open and close DMZ feature.
  Disable: close DMZ feature
  Enable: enable the DMZ feature for assigned IP
  Enable Super DMZ: enable the DMZ feature for assigned MAC
- **DMZ IP Address**: Please Enter the IP address of the computer which you want to set as DMZ host
- **DMZ MAC Address**: Please Enter the MAC address of the computer which you want to set as DMZ host
- **Except TCP port**: disable or enable for TCP port

Note: When DMZ host is settled, the computer is completely exposed to the external network; the firewall will not influence this host.

3.3.13.4 System Security



Include *Remote management*, *Ping from WAN Filter, Block Port Scan*, *Block SYN Flood* and *SPI Firewall* (Stateful Packet Inspection), Disable WAN Telnet and Disable WAN SSH.

1) Remote management (via WAN)

Allow: allow users to visit H685/H820 router from remote side.

Deny: deny users to visit H685/H820 router from remote side.

2) Ping form WAN Filter

Disable: disable users to ping H685/H820 router from remote side.
Enable: enable users to ping H685/H820 router from remote side.

3) Block Port Scan
Disable: disable block port scan
Enable: enable block port scan.

4) Block SYN Flood
Disable: disable block SYN flood.
Enable: enable block SYN flood.

5) Stateful Packet Inspection (SPI)
Disable: disable SPI.
Enable: enable SPI.

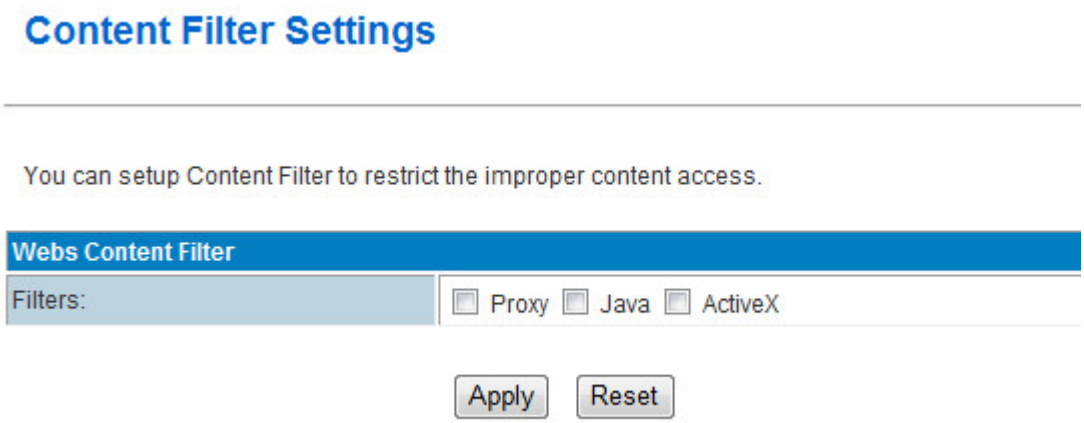
6) Disable WAN Telnet
Disable: users can remote Telnet H685/H820.
Enable: users cannot remote Telnet H685/H820.

7) Disable WAN SSH
Disable: users can remote SSH H685/H820.
Enable: users cannot remote SSH H685/H820.

3.3.13.5 Content Filter Settings

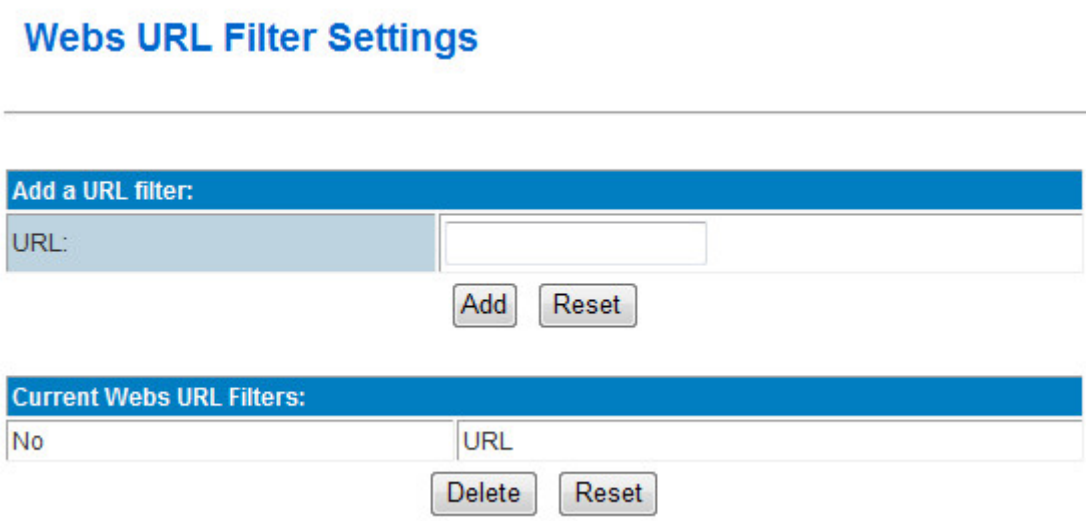
You can setup Content Fillter to restrict the improper content access, including Webs Content Settings, URL filter and Host Filter.

- **Proxy/Java/Activex Filter**



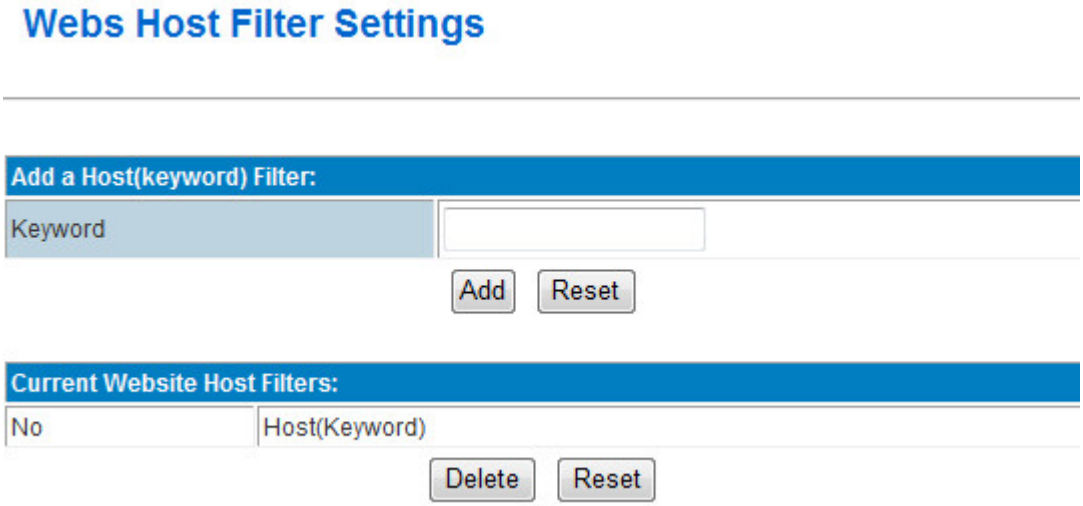
Support Proxy, Java, ActiveX filter.

- **Web URL Filter**



Fill in the URL for filter.

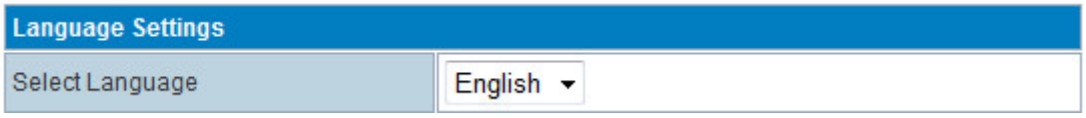
- **Web Host Filter**



3.3.14 Administration

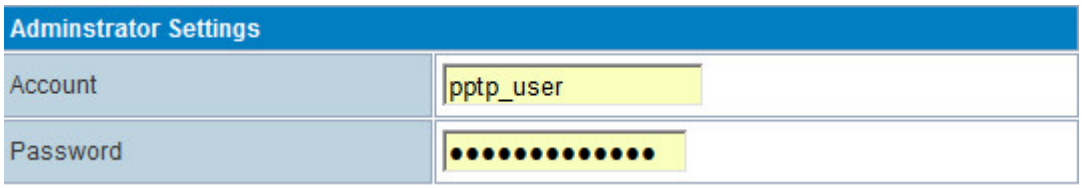
3.3.14.1 Management

- **Language Settings**



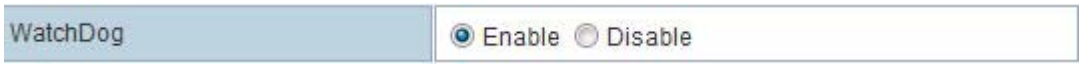
Select Web display language. Default is English. Can OEM other languages.

- **Administrator Settings**

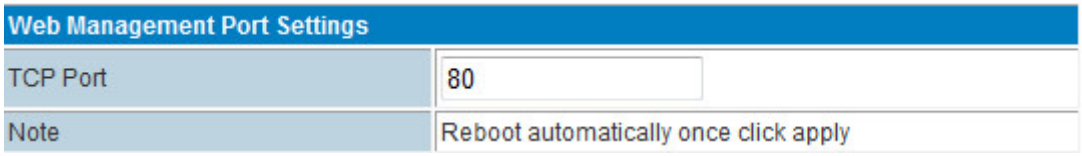


Select Web display language. Default is English. Can OEM other languages.

- **WatchDog**

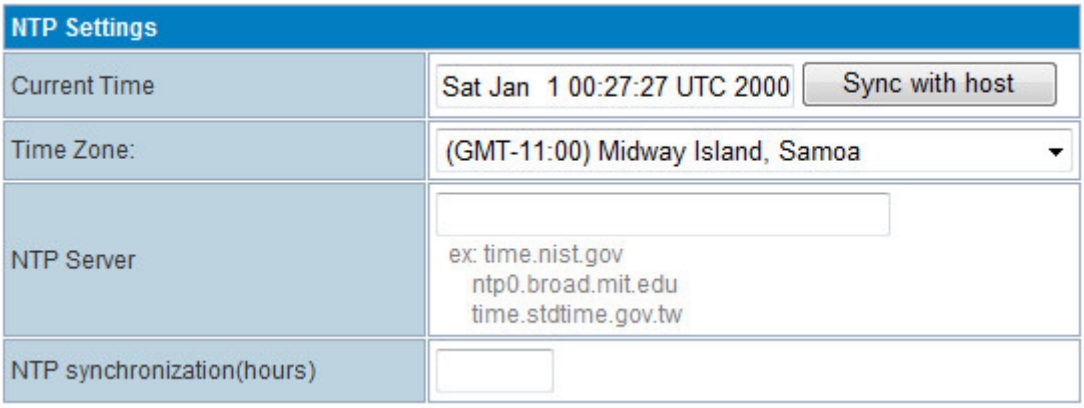


- **Web Management Port Settings**

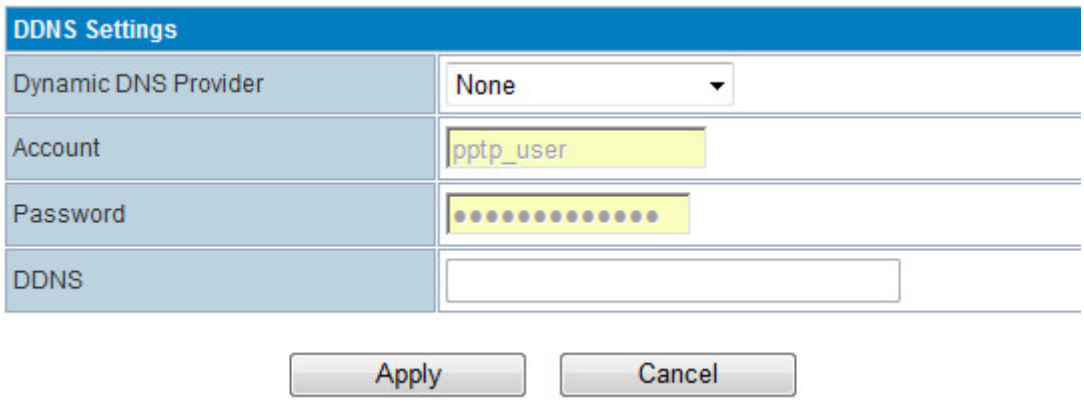


Default port is 80, sometimes if the carrier/ISP block 80 port for remote incoming, can try to modify it to port 10000.

- **NTP Settings**



- **DDNS Settings**

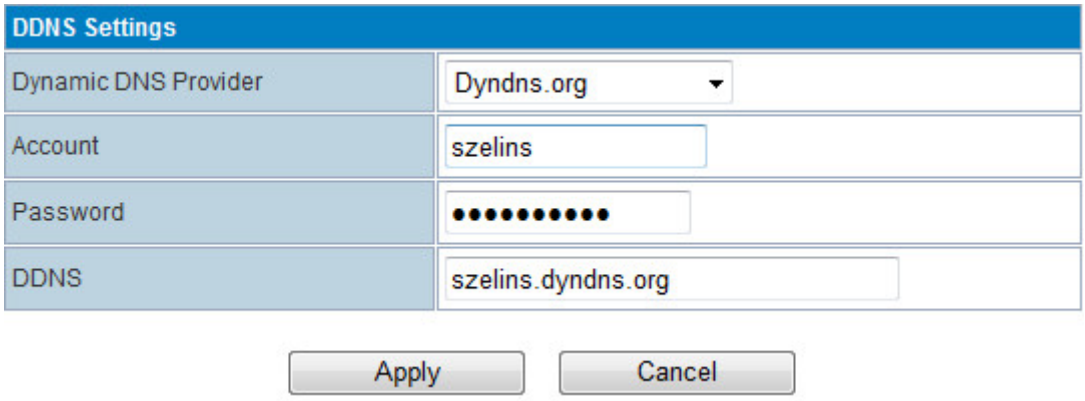


- **Dynamic DNS Provider**: choose the right DNS server provider. Supported server list.

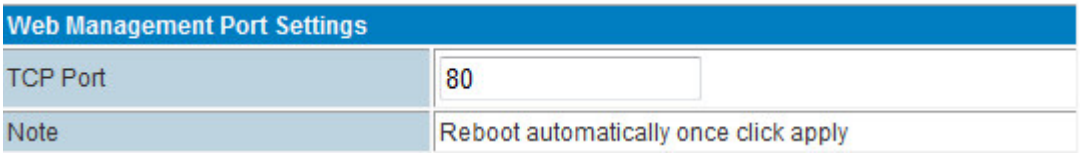
  Dyndns.org
  freedns.afraid.org
  www.zoneedit.com
  www.no-ip.com
  www.3322.org
  www.ez-ip.net
  www.justlinux.com
  www.dhs.org
  www.ods.org
  gnudip.cheapnet.net
  www.dyn.ca
  www.tzo.com
  www.easydns.com
  www.dyns.cx
  www.hn.org

- **Account**: fill in account info.
- **Password**: fill in password info.
- **DDNS**: fill in DDNS info.

Example:

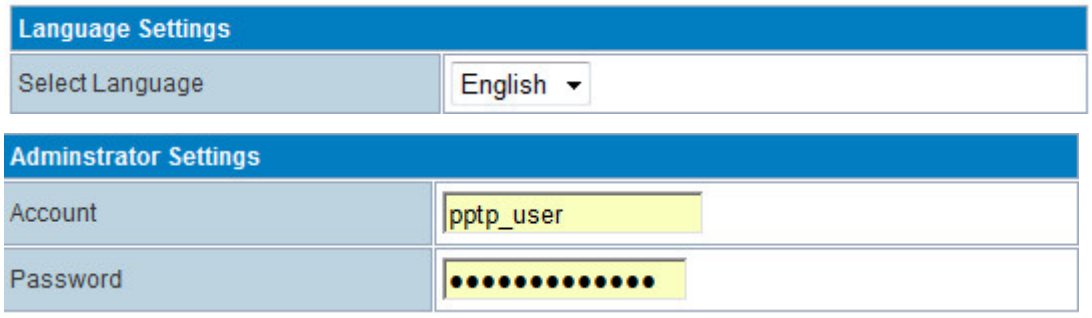


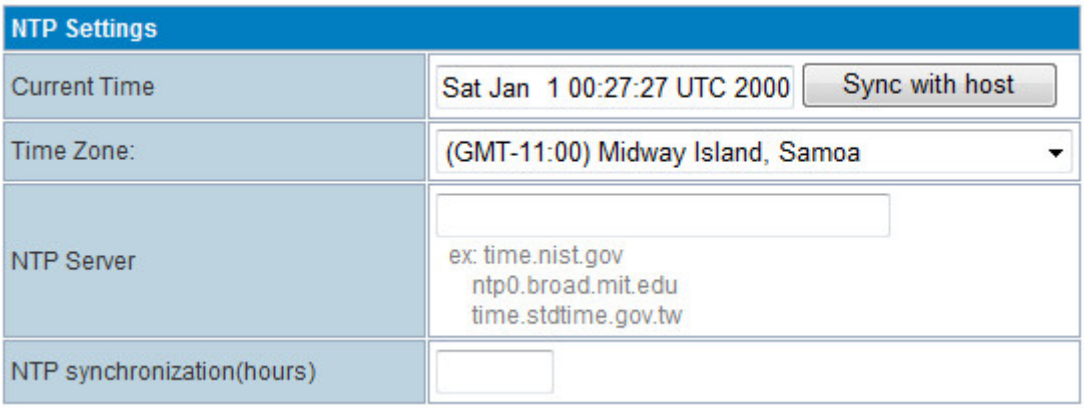
3.3.14.1.1 Router web port



Please input the web port of the router. Normally we use 80 or 10000.
Please re-power the router after changing the port number.

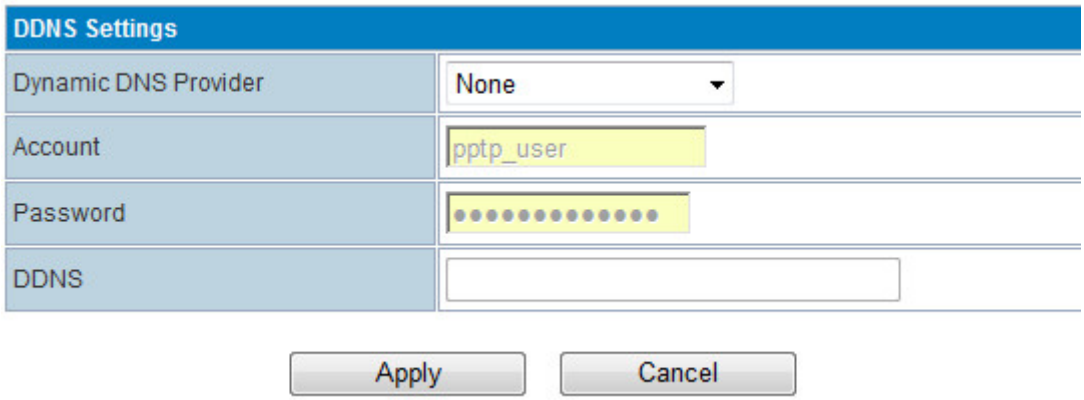
3.3.14.1.2 Language, password and NTP settings





- Select Language
- Administrator Settings. The default both are admin.
- NTP Settings

3.3.14.1.3 DDNS settings

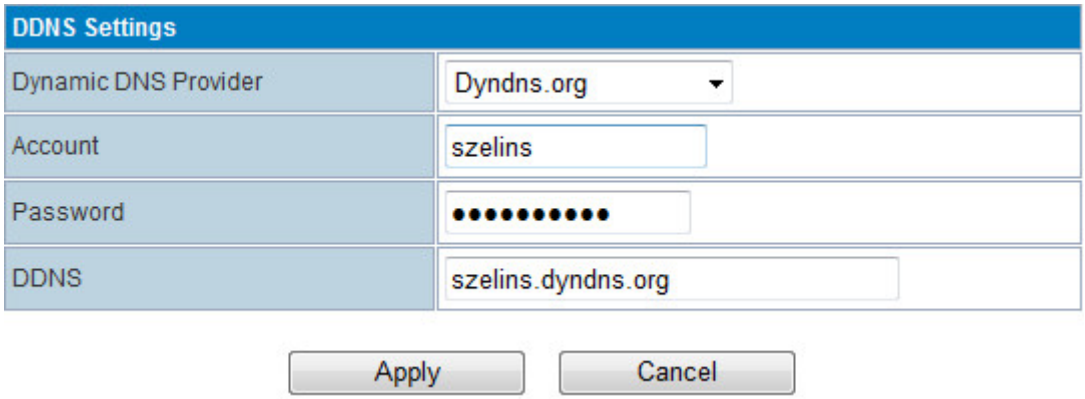


- **Dynamic DNS Provider**: choose the right DNS server provider. Supported server list.

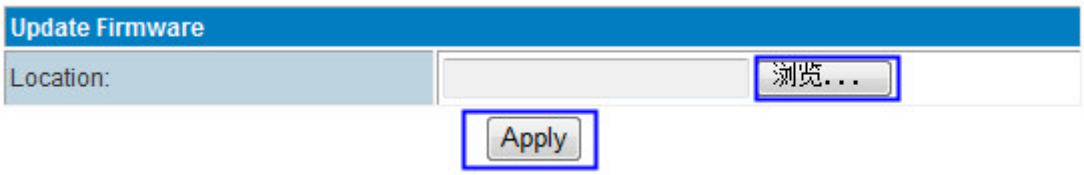
Dyndns.org
freedns.afraid.org
www.zoneedit.com
www.no-ip.com
www.3322.org
www.ez-ip.net
www.justlinux.com
www.dhs.org
www.ods.org
gnudip.cheapnet.net
www.dyn.ca
www.tzo.com
www.easydns.com
www.dyns.cx
www.hn.org

- **Account**: fill in account info.
- **Password**: fill in password info.
- **DDNS**: fill in DDNS info.

Example:



3.3.14.2 Upload Firmware (Upgrade Firmware)

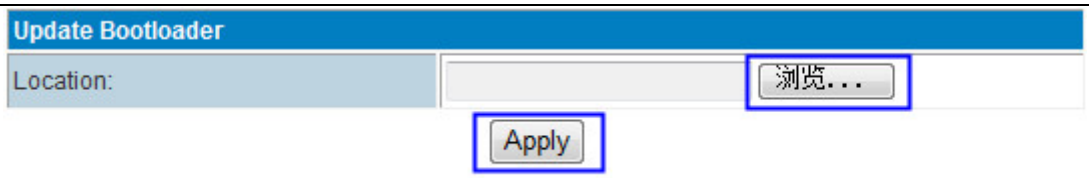


Upgrade the firmware to obtain new functionality. It takes about 2~5 minutes. Choose the correct firmware file, then click “Apply” button.

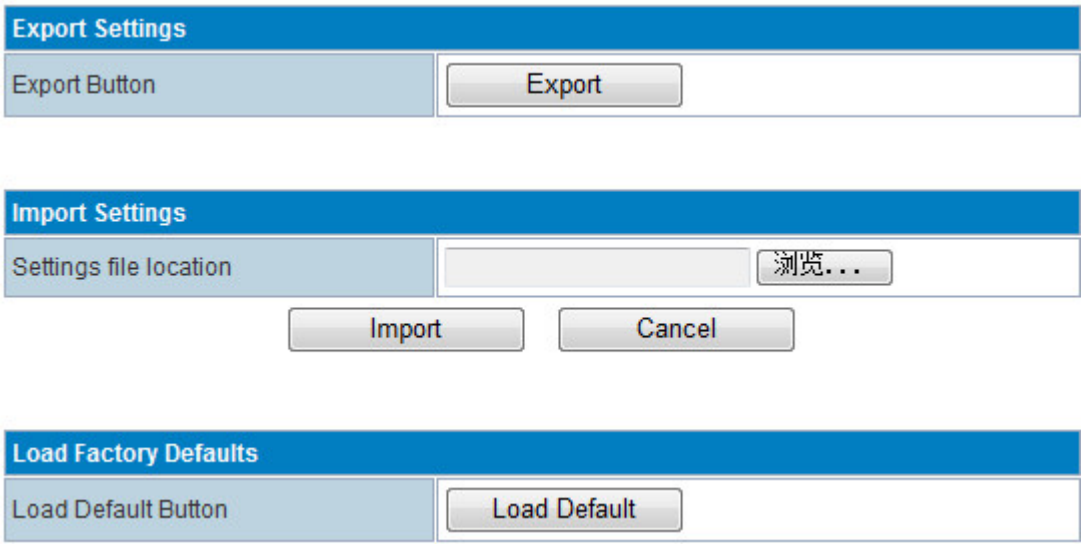
Notes:
1. highly recommend to “Load Default” the H685 Router after upload the firmware. “Load Default” will cause all the settings lost. Please backup/export the settings before “Load Default”. Or re-configure the H685 after “Load Default”.

2. Clear the IE web browser history after upgrading the firmware. The reboot the IE web browser and the router.

For some version of firmware, it requires uploading bootloader also. Please operate at the following picture. But most of time it no need do this step unless E-Lins guide or inform you to upload bootloader.



3.3.14.3 Settings Management



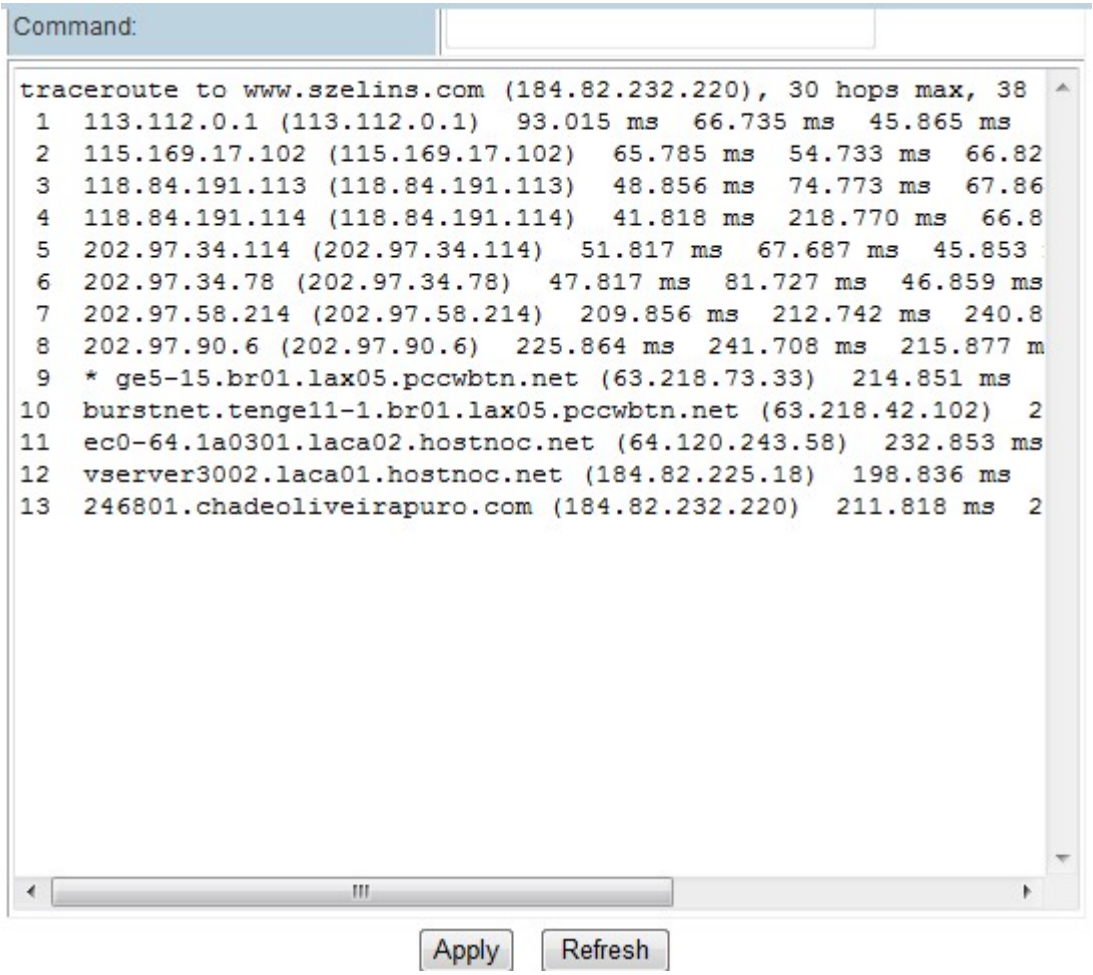
Here you can make a backup of current settings or restore previous settings of the router .

- **Export settings:** click ‘export’ to export configuration files and then select save path.
- **Import settings:** click ‘browse’, select previous backup configuration files and then click ‘Import’. Then all the previous settings will be recovered.
- **Load Factory Defaults:** click ‘Load Default’ then all settings will be restored to factory settings. This is not recommended in order to avoid the loss of important parameter

3.3.14.4 System Command

Input related command at command area. Click “Apply” button to execute. Then click “Refresh” button. The blank area will display infos.
Right now this feature support “ping” and “traceroute” command.

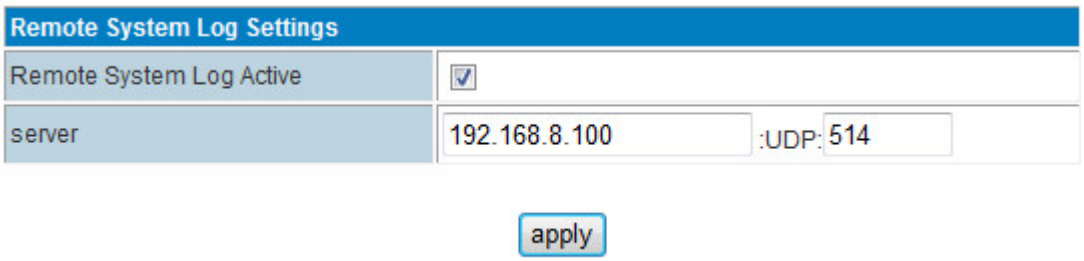
System command
Command:
traceroute www.szelins.com
Step1: input the command
Step2: click this button
Step3: click this button
Apply
Refresh



3.3.14.5 System Log

- **Remote System Log Settings**

H820 Router support export the sys log into remote server.



It requires sys log server tool.
Download link: http://www. szelins.com/download/tool/SyslogWatcherSetup-4.2.0-win32_1.rar

- **Local System Log**

System Log

```
Jan  1 00:00:16 syslogd started: BusyBox v1.12.1
Jan  1 00:00:16 kernel: fuse init (API version 7.8)
Jan  1 00:00:16 kernel: io scheduler noop registered (default)
Jan  1 00:00:16 kernel: Ralink gpio driver initialized
Jan  1 00:00:16 kernel: i2cdrv_major = 218
Jan  1 00:00:16 kernel: HDLC line discipline: version $Revision: 1.1.1.1
Jan  1 00:00:16 kernel: N_HDLC line discipline registered.
Jan  1 00:00:16 kernel: Ralink APSoC Hardware Watchdog Timer
Jan  1 00:00:16 kernel: SoftDog: cannot register miscdev on minor=130 (e
Jan  1 00:00:16 kernel: Serial: 8250/16550 driver $Revision: 1.8 $ 2 por
Jan  1 00:00:16 kernel: serial8250: ttyS0 at I/O 0xb0000500 (irq = 37) i
Jan  1 00:00:16 kernel: serial8250: ttyS1 at I/O 0xb0000c00 (irq = 12) i
Jan  1 00:00:16 kernel: RAMDISK driver initiali
Jan  1 00:00:16 kernel: zed: 16 RAM disks of 16384K size 1024 blocksize
Jan  1 00:00:16 kernel: loop: loaded (max 8 devices)
Jan  1 00:00:16 kernel: rdm_major = 253
Jan  1 00:00:16 kernel: Ralink APSoC Ethernet Driver Initilization. v2.1
Jan  1 00:00:16 kernel: MAC_ADRH -- : 0x00000866
Jan  1 00:00:16 kernel: MAC_ADRL -- : 0x010007c1
Jan  1 00:00:16 kernel: PROC INIT OK!
Jan  1 00:00:16 kernel: IMQ starting with 2 devices...
Jan  1 00:00:16 kernel: IMQ driver loaded successfully.
Jan  1 00:00:16 kernel:    Hooking IMQ before NAT on PREROUTING.
Jan  1 00:00:16 kernel:    Hooking IMQ after NAT on POSTROUTING.
Jan  1 00:00:16 kernel: PPP generic driver version 2.4.2
Jan  1 00:00:16 kernel: PPP BSD Compression module registered
Jan  1 00:00:16 kernel: NET: Registered protocol family 24
```

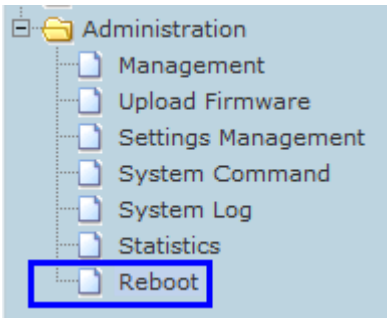
3.3.14.6 Statistics

Memory	
Memory total:	60684 kB
Memory left:	31960 kB
WAN/LAN	
WAN Rx packets:	0
WAN Rx bytes:	0
WAN Tx packets:	6
WAN Tx bytes:	492
LAN Rx packets:	6093
LAN Rx bytes:	400006
LAN Tx packets:	6120
LAN Tx bytes:	1107041

All interfaces	
Name	eth2
Rx Packet	6137
Rx Byte	513803
Tx Packet	6134
Tx Byte	1139410
Name	ra0
Rx Packet	117309
Rx Byte	32422543
Tx Packet	1443
Tx Byte	0
Name	eth2.1
Rx Packet	6127
Rx Byte	427889
Tx Packet	6127
Tx Byte	1132011
Name	eth2.2
Rx Packet	0
Rx Byte	0
Tx Packet	6
Tx Byte	492
Name	br0
Rx Packet	6128
Rx Byte	404417
Tx Packet	6158
Tx Byte	1130413
Name	ppp0
Rx Packet	10
Rx Byte	160
Tx Packet	9
Tx Byte	168

Display the statistics information of system flow.

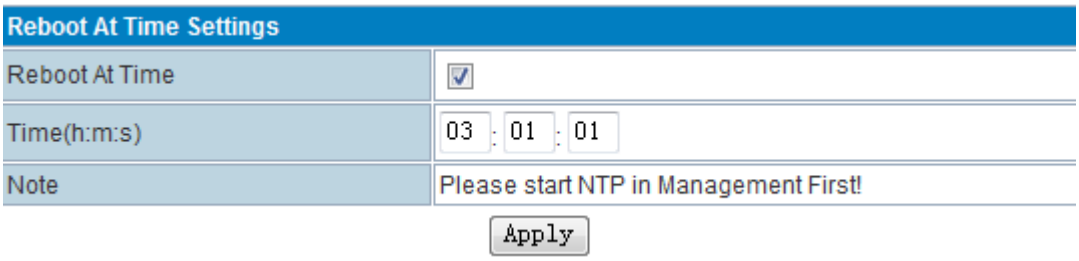
3.3.14.7 Reboot



Question: Why to use Reboot Feature?
Answer: Router is similar a computer, whose performance depends on hardware and software. The Router's performance becomes weaker after very long time working. With reboot, it will refresh the performance.
Question: Is necessary to use the Reboot Feature?
Answer: Not really. Our router has high reliable and stable performance. It not requires using reboot feature compulsively. However, Reboot Feature will double ensure the router to be more stable and reliable.

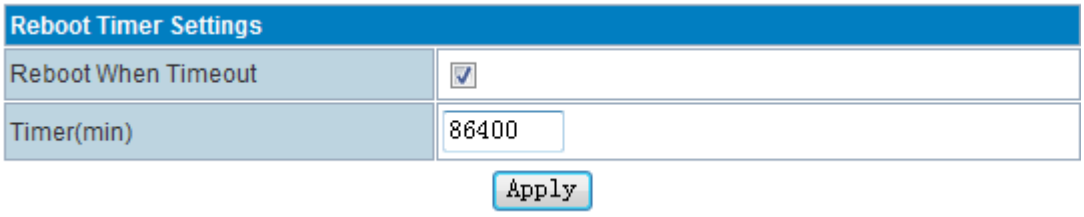
H820 Router support three types of Reboot Feature.

- **Reboot AT Time Settings**



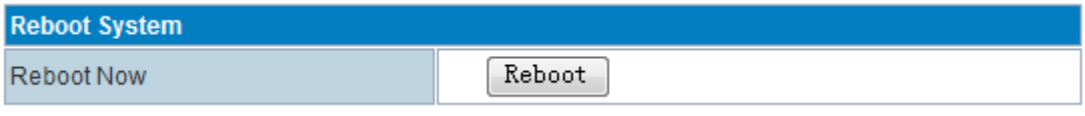
Users can define the exact time to reboot for everyday.

- **Reboot AT Time Settings**



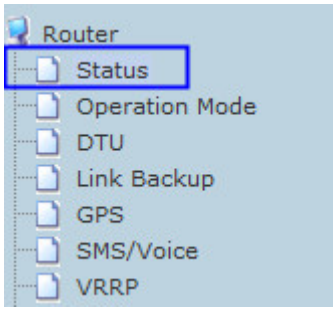
Users can set timer to reboot.

- **Reboot AT Time Settings**



Manually click "Reboot" button to reboot immediately.

3.3.14.8 Status



System Info	
Series	H820
SN	086412100296
Software Version	2.2.13 (Oct 20 2012)
Hardware Version	1.0.0
System Up Time	1:41
Operation Mode	Gateway Mode
Cell Network Info	
Cell Modem	HUAWEI-EM820W
IMEI/ESN	355858040246813
Sim Status	SIM ready
Selected Network	AUTO
Registered Network	Registered on Home network: "46001",2
Sub Network Type	WCDMA
Signal	13
Cell Status	UP

Internet Configurations	
Connected Type	CELL
WAN IP Address	172.17.194.232
Subnet Mask	255.255.255.255
Default Gateway	10.64.64.64
Primary Domain Name Server	210.21.196.6
Secondary Domain Name Server	221.5.88.88
MAC Address	08:66:01:00:07:C0
Local Network	
Local IP Address	192.168.8.1
Local Netmask	255.255.255.0
MAC Address	08:66:01:00:07:C1

IPSEC Status	
Name	Status
PPTP Status	
PPTP	down
L2TP Status	
L2TP	down

From this page you can see the Router's basic running state.

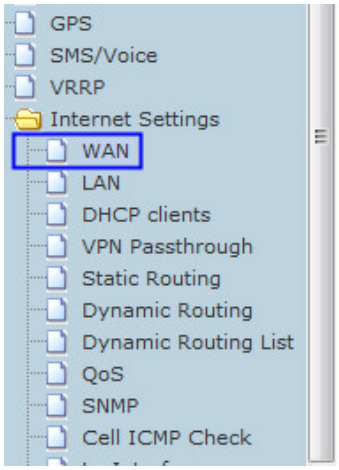
- **Ethernet Port Status**

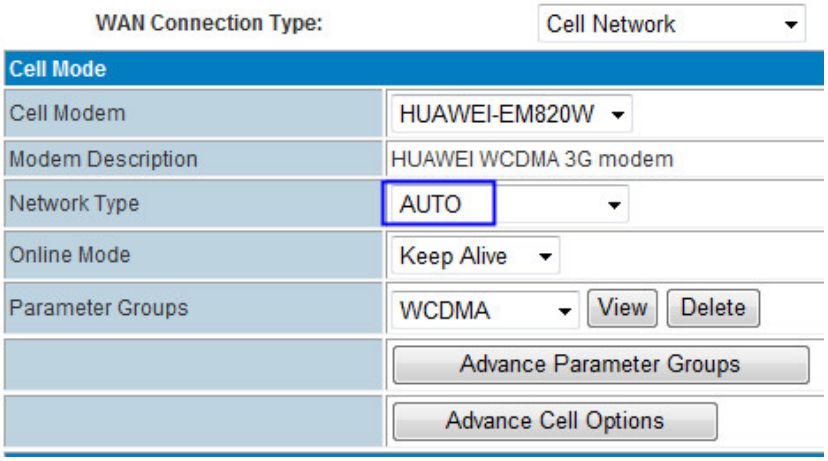
- **System Info**

- **Product Model**: indicates the model name
- **SN**: indicates the product SN
- **Software Version:** software version reveals the status of software update.
- **Hardware Version**: indicates the hardware version
- **System Up Time:** this time directly reveals router working hours
- **Operation Mode:** indicates the router working mode

- **Cell Network Info**

- **Cell Modem:** indicates inside cellular module modem name
- **IMEI/ESN:** indicates IMEI or ESN info of inside cellular module modem
- **Sim Status:** indicates sim card status
- **Selected Network:** indicates the selected working network

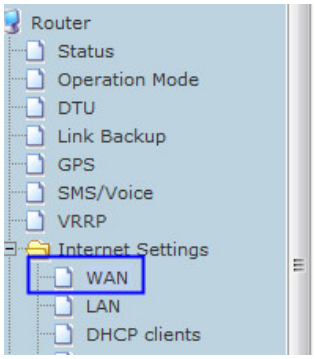


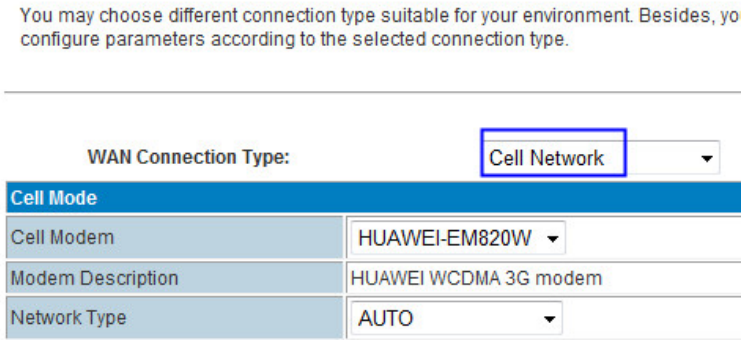


- **Registered Network:** indicates the current working network carrier ID
- **Sub Network Type:** indicates the current working network type
- **Signal:** reveals the current network state of 2G/3G. 0 and 99 mean no signal.
- **Cell state:** indicates the cellular is online or offline

➢ **Internet Configurations**

- **Connected Type:** indicates the selected WAN type.





- **WPN IP address:** the IP expose when the router gets on internet.
- **Primary Domain Name Server**: indicates the primary DNS of set or from ISP.
- **Secondary Domain Name Server**: indicates the secondary DNS of set or from ISP.
- **MAC Address**: indicates the WAN MAC address

➢ **Local Network**

- **Local IP address:** the H820 Router LAN IP
- **MAC Address:** the LAN MAC address

➢ **VPN Status**

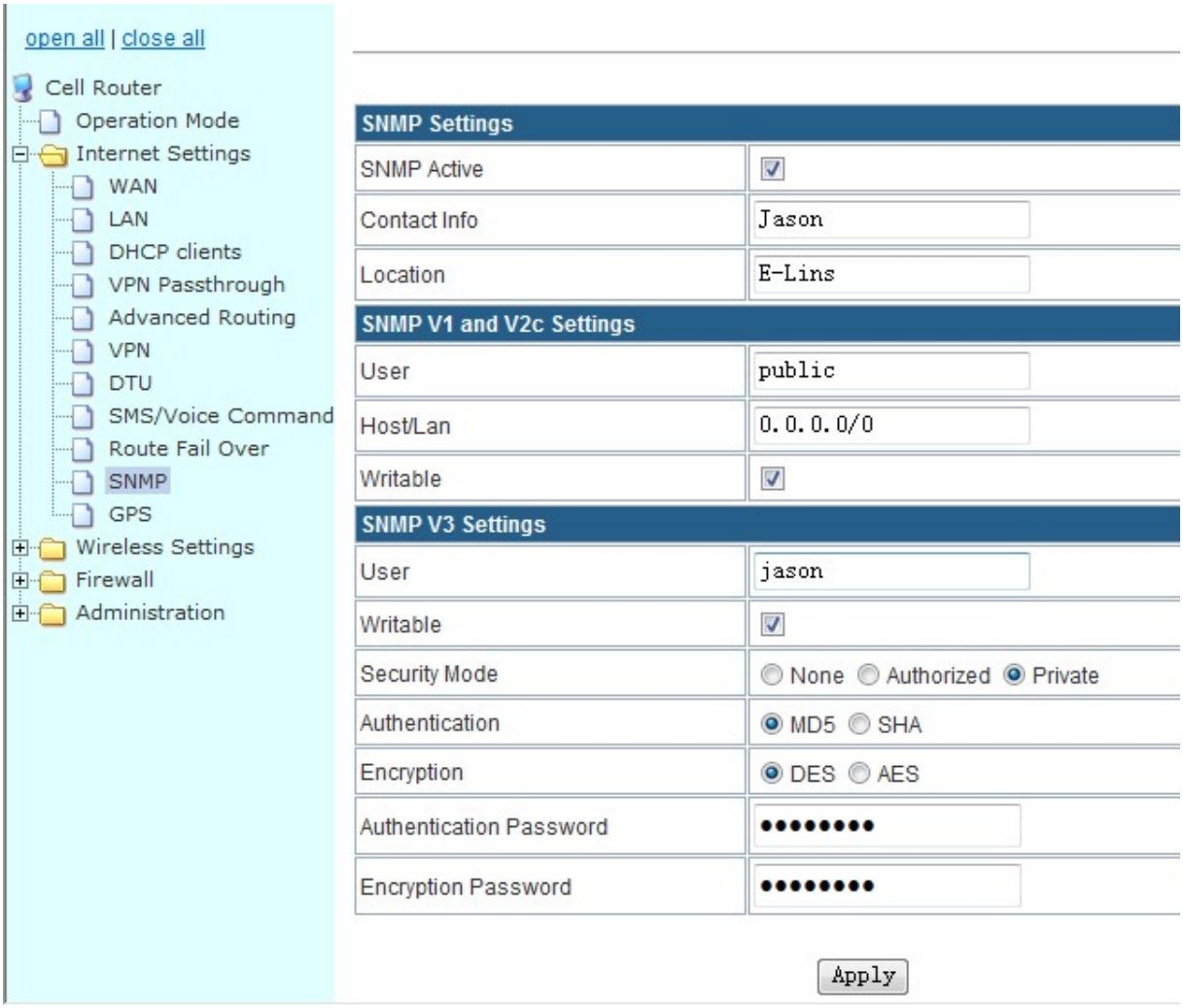
- **IPSEC Status:** indicates IPSEC status info
- **PPTP Status:** indicates PPTP status info
- **L2TP Status:** indicates L2TP status info

3.3.15 SNMP (For version with SNMP only)

Notes: SNMP feature is for H820 Router with SNMP option only.

Soft tool download link:
http://www. szelins.com/download/tool/SNMP-JManager-v1.0.rar

H820 router web page – Internet Settings – SNMP
Fill in related parameters in the screen like follows,



SNMP Active: tick it to active SNMP feature.
Contact Info: set the contact info here
Location: set router's installation address.

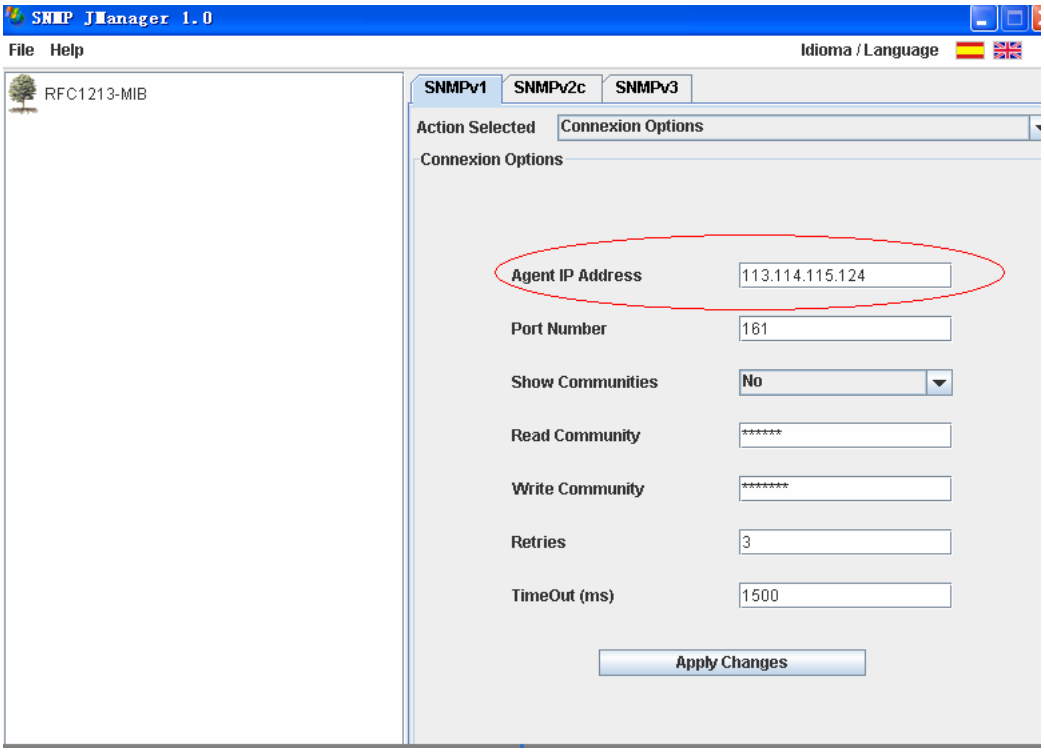
User: set public name
Host/Lan: set the network range to visit the router via SNMP, default we set all as 0.0.0.0./0
Writable: tick it to enable it.
Security Mode: choose the correct one, only for SNMP V3 version.
Authentication: choose the correct one, only for SNMP V3 version.
Encryption: choose the correct one, only for SNMP V3 version.
Authentication Password: fill in the right one.
Encryption Password: fill in the right one.

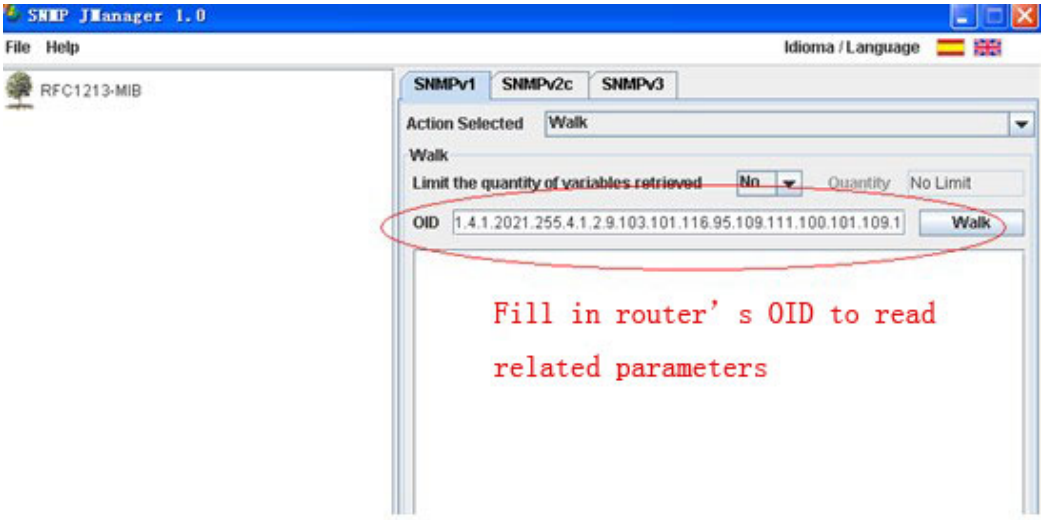
Click “Apply” button and reboot the router.

Here list the most important OID:

1.3.6.1.4.1.2021.255.4.1.2.9.103.101.116.95.109.111.100.101.109.1
(read module modem model)
1.3.6.1.4.1.2021.255.4.1.2.10.103.101.116.95.117.112.116.105.109.101.1
(system running time)
1.3.6.1.4.1.2021.255.4.1.2.12.103.101.116.95.109.101.109.95.102.114.101.101.1
(memory capacity)
1.3.6.1.4.1.2021.255.4.1.2.15.103.101.116.95.99.101.108.108.95.115.116.97.116.117.115.1 (3G network status)
1.3.6.1.4.1.2021.255.4.1.2.15.103.101.116.95.108.50.116.112.95.115.116.97.116.117.115.1 (pptp status)
1.3.6.1.4.1.2021.255.4.1.2.15.103.101.116.95.112.112.116.112.95.115.116.97.116.117.115.1 (l2tp status)

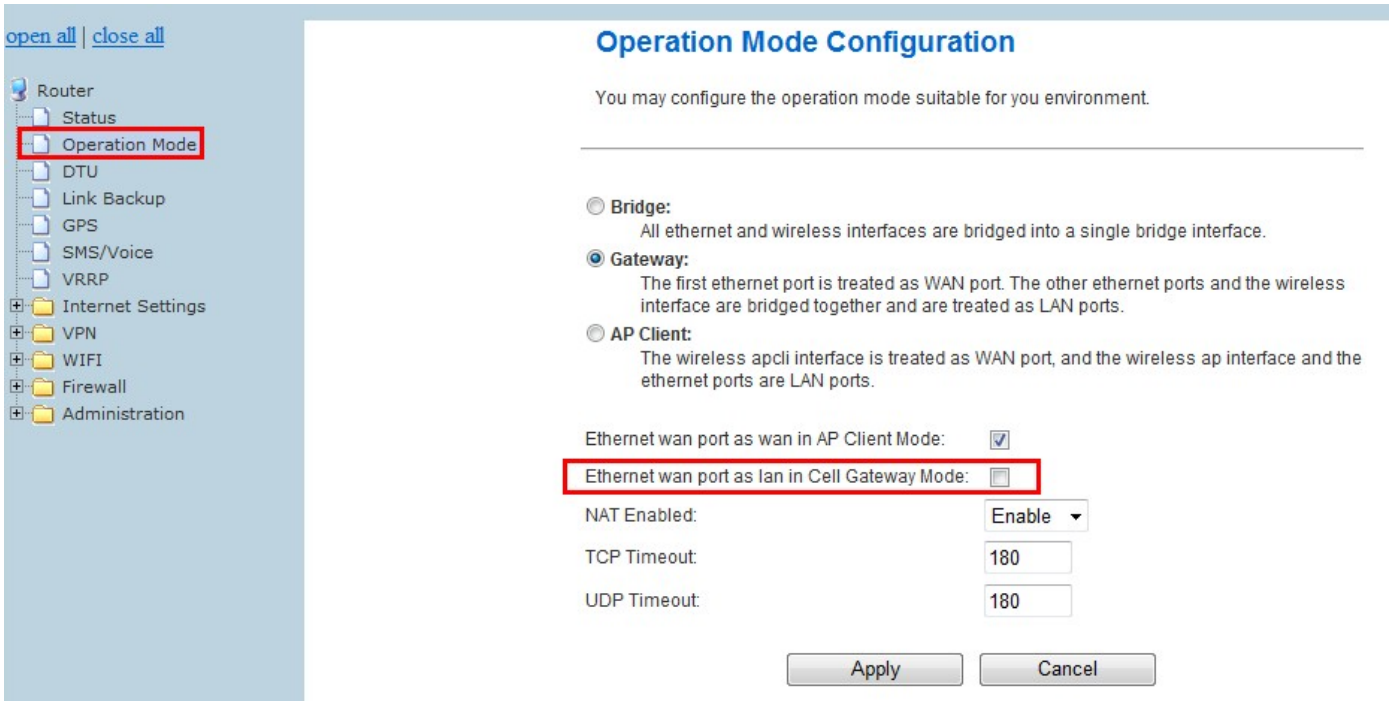
List client side’s picture as follows,



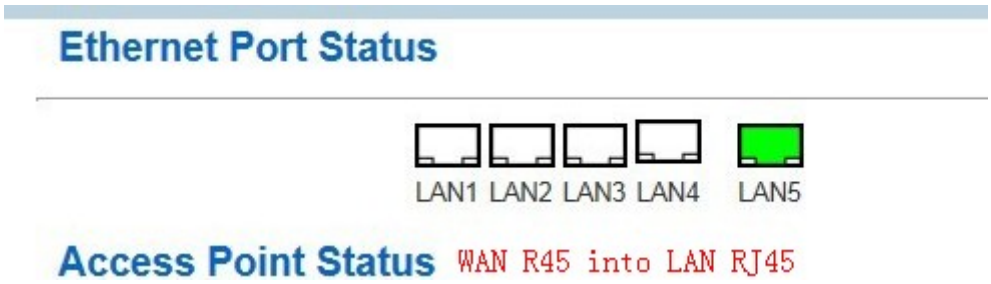


3.3.16 Convert the WAN RJ45 port to LAN RJ45 port

Notes: with this settings, the H820 router has no WAN RJ45 port, just 5 LAN RJ45 ports.



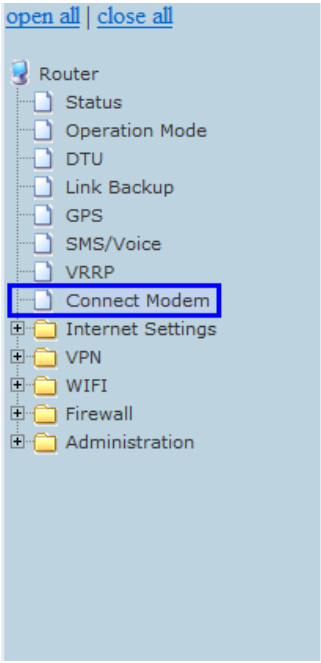
Check the “Ethernet WAN Port as lan in Cell Gateway Mode:”, click the “Apply” button, the WAN RJ45 will switch into LAN RJ45. Please re-boot the router. The router will display the status as follows,

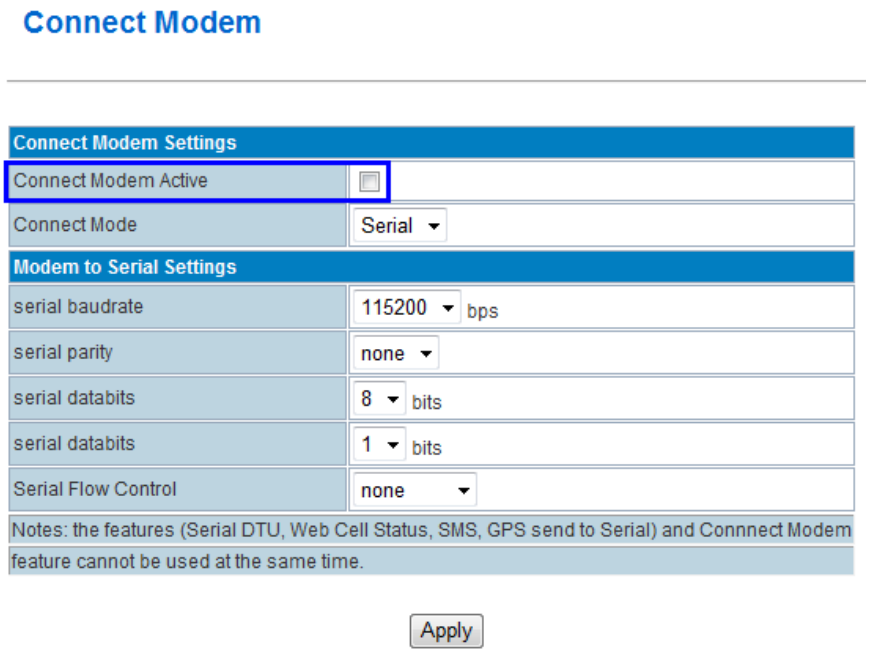


3.3.17 Connect Modem

With this feature, the devices connected to H685 serial port can send at command. But can not transmit the data.

Notes:
1) this feature is for H685 with DTU option only.
2) this feature cannot be used same time with “DTU” feature. Please disable the “DTU” feature if use “Connect Modem” feature. Please disable the “Connect Modem” feature if use “DTU” feature.
3) if enable this feature, the Status info may not be updated.





- **Connnect Modem Active:** enable “Connect Modem” feature
- **Connect Mode:** Serial only

Modem to Serial Settings

- **serial baudrate:** support 9600/19200/38400/57600/115200bps
- **serial parity:** support none/odd/even
- **serial databits:** support 7 bits and 8 bits
- **serial stopbit:** support 1 bits and 2 bits
- **Serial Flow Control:** support none/hardware/software

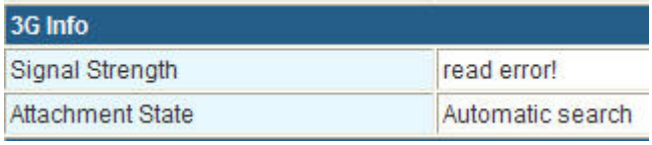
Chapter 4

4 FAQ

4.1 Open Device Error

With this error, most of time the module inside the router is loosen. Please try to fasten it.

4.2 Read Error



With this error, it indicates the sim card is not well touched with sim card slot. Try to check the sim card is right put. Try to scrap the sim card slot and make it clean.

4.3 Signal Strength has right number, but cannot dialup

3G Info	
Signal Strength	16 , (0-31)
Attachment State	Automatic search

Try to check the WAN port setting is correct.

4.4 Signal Strength shows 99

3G Info	
Signal Strength	16 , (0-31)
Attachment State	Automatic search

Here it shows 16, it means signal is okay. If shows 99, try to check the sim card is has enough balance. Or if the data business is supported.

4.5 The router cannot be remote web visited

1) Default the router's web port is 80. Some network ISP block the 80 of incoming. So confirm with your ISP which port can be visited. Or you can change other port to try, such as port 10000. Refer to *chapter 3.3.14.1.1* Router web port to operate.

2) Check if the router's WAN IP can be ping through via the PC.

4.6 Signal shows 99 but still can connect to internet and get WAN IP

Our router built-in different types of modem inside, some modem cost this. But will not affect the use.

4.7 Router shows sim card and network info, but cannot connect to internet

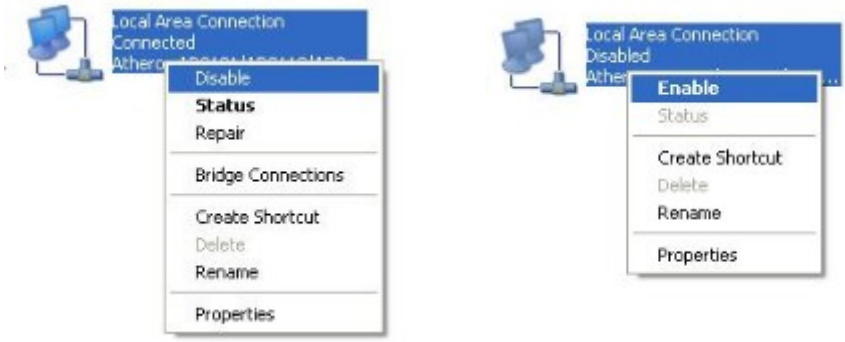
Check the sim card is with balance or limited service by the ISP.

4.8 DDNS not working

1) Please confirm the DDNS configuration is correct.
2) Check if the router is online and get IP, and can visit internet.
3) Check if the WAN IP from sim card (shows in the status page once the router is online) is a public IP or privacy IP, privacy IP will make DDNS no work.

4.9 Cannot Connect Router via RJ45 LAN

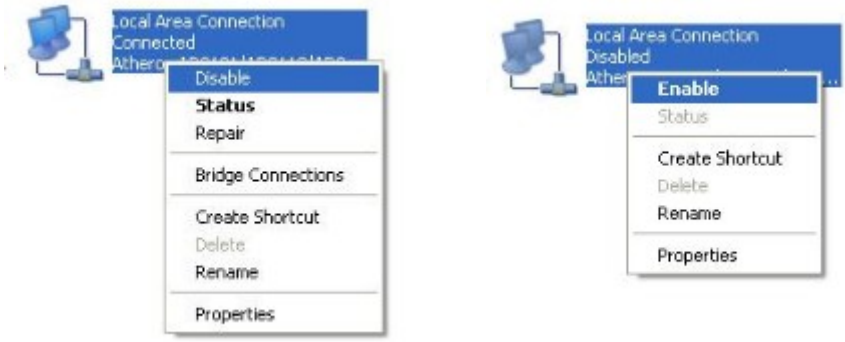
1) Please check if Ethernet cable is correctly connected.
2) Double check PC network card IP is correct configured. Please refer to *Chapter 3.2*
3) Try to disable the PC network card, and re-enable it.



4) Reset the H820 router. Power on router, keep press “RST” button until 12 seconds, and then release it. H820 router will automatically load default.

4.10 Cannot Connect H820 WiFi

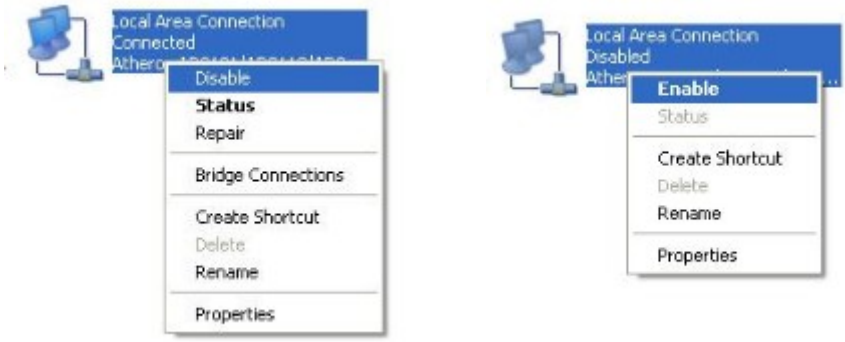
1) Double check if the device’s WiFi switch is on.
2) Double check if the H820 WiFi is on.
3) Double check Device’s wireless network card IP is correct configured. Please refer to *Chapter 3.2*
4) Try to disable the Device’s network card, and re-enable it.



5) Reset the H820 router. Power on router, keep press “RST” button until 12 seconds, and then release it. H820 router will automatically load default.

4.11 Can Connect H820 WiFi via Manual IP but cannot via DHCP

1) Try to disable the Device’s network card, and re-enable it.



2) Reset the H820 router. Power on router, keep press “RST” button until 12 seconds, and then release it. H820 router will automatically load default.

4.12 Cannot get Cell WAN IP

H820 Router get cellular WAN IP once it’s online.

Internet Configurations	
Connected Type	CELL
WAN IP Address	10.193.205.114
Subnet Mask	255.255.255.255
Default Gateway	10.64.64.64
Primary Domain Name Server	210.21.196.6
Secondary Domain Name Server	221.5.88.88
MAC Address	08:66:01:00:04:A0

If not get the WAN IP, the problem maybe:

Item.	May caused by	Solution
1	Cellular WAN port is not right configured	Refer to Chapter 3.3.3.1 Cellular WAN configuration to solve it.
2	SIM card has problem for data business or no balance	Check the sim card with the ISP or network provider or sim card provider. Try another working sim card.
3	No network signal	Move the router to another site to check.
4	VPN configuration is wrong	You may configure the VPN in wrong way. Please check the WAN port configuration.
5	Cellular network problem	Sometimes cellular network may get problem or unstable. Try to move to another site to test. Or try to test with another ISP/Carrier SIM card
6	Module modem is defeated	Send back the unit to factory for repair

4.13 Can not power on

Solution:

1. Check if the power adapter connector is loose from the router.
2. Try to replace a power adapter. H820 series router uses 9V1A or 9V2A or 12V1A or 12V1A or 12V2A power adapter with 2.5mm connector
3. Router hardware defeated. Send back to factory for check or repair.

4.14 Sys log shows “connect script failed”

Problem maybe:

Item.	May caused by	Solution
1	A. sim card no data business, or problem;	A. Check sim card data business and balance. B. Get balance available

	B. sim card balance no available;	
2.	WAN APN parameter is wrong	Check APN parameter of WAN port, then make it correct and try
3	Network unstable problem	Try later, or move to other network to try.
4	Module modem inside router setting wrong by uncertain operation	Tell the module modem type (marked at the back cover of router) to technical support for help.
5	Module modem inside router only support 2G or 3G only	Need contact sales for replacement or repair

4.15 H820 Router is online, but cannot visit website.

Problem maybe:

Item.	May caused by	Solution
1	DNS problem	Check the DNS server of H820 is correct. The DNS is from the ISP once H820 is online. Sometimes the ISP not give the right DNS server IP, you can try to set correct DNS manually at your PC or Device network card.
2.	SIM card business problem	Check APN parameter of WAN port, then make it correct and try. Double confirm with the ISP/Carrier if the sim card info is 100% correct. Try to change another sim card to try.
3	Signal is too weak	Too weak signal may cause all the DNS resolution fails. Try to get better signal.
4	Network is too bad	Contact ISP/Carrier to get better network

4.16 Port forwarding not working

Question: I configure the port forwarding feature correctly, but still no work.
Answer: first, please check the port if block by your ISP/Carrier, because some ISP/Carrier block some ports for security reason.
For example, the H685m gets WAN IP 27.38.14.223. And the H820's web port is 80. So from the other network, try to visit http:// 27.38.14.223:80 if can be okay. If no okay, it means the ISP/Carrier blocks the 10000 port. Then check with your ISP/Carrier which ports are open for use. Then re-try the port forwarding feature.

4.17 Serial DTU point-to-point solution not working

Problem: Take two H820. Both support Serial to cellular gateway feature (DTU feature). Configure one as client, the other as server. But no work.
Answer: First, we confirm that the H820 both are online, and the server's IP is public IP that can be ping through from other networks.

Second, we confirm both H820's DTU feature (Serial to Cellular Feature) are working. We test an example as follows,

H820 DTU with vodafone SIM as client (in Germany)--- China Telecom as server (In China): working
H820 DTU with vodafone SIM as server (in Germany)--- China Telecom as client (In China): working
H820 DTU with vodafone SIM as client (in Germany)---- H820 DTU with Vodafone SIM as server (in Germany) : no working

This indicates the two Vodafone SIM cards cannot communicates each other. The Vodafone ISP limit the two internal's SIM card's communication.

You have two ways to solve the problem.
1) Get another SIM card from another ISP to test.
2) Ask the Vodafone ISP to unlimit two Vadafone SIM's communication.

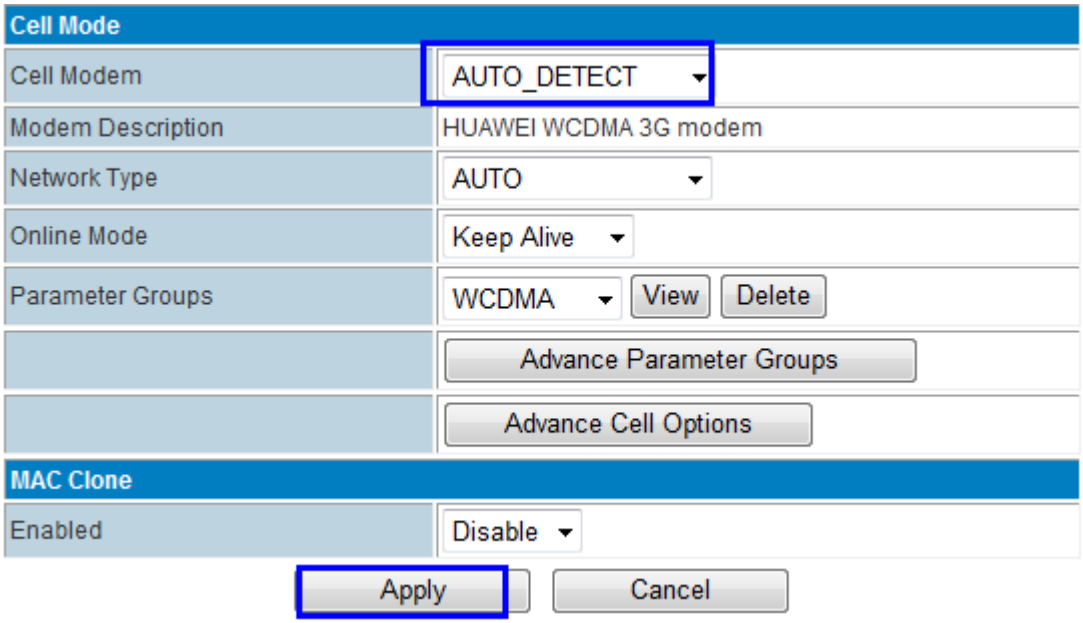
4.18 Can't open device /dev/ttyUSBx.

Problem: Status page shows "Can't open device /dev/ttyUSBx".

Cell Network Info	
Cell Modem	HUAWEI-EM820W
IMEI/ESN	Can't open device /dev/ttyUSB3.
Sim Status	Can't open device /dev/ttyUSB3.
Selected Network	AUTO
Registered Network	Can't open device /dev/ttyUSB3.
Sub Network Type	Can't open device /dev/ttyUSB3.
Signal	Can't open device /dev/ttyUSB3.
Cell Status	DOWN

Solution:
Step 1) H820 Router Web – Internet Settings – WAN, at Cell Modem, please choose "AUTO_DETECT" and click "Apply" button.

Step 2) If step 1 cannot solve the issue, try to open the case, and scrap the module modem fingerprint, then re-install it into the mini PCIe slot. And try Step 1) again.



Step 3) If the issue is still existed after Step 1) and Step 2), please contact our sales for return to check or repair.

4.19 PPTP is on, but cannot be through to PPTP Server

Issue and phenomenon: in web status page, the PPTP shows “on”, but try to ping PPTP Server, cannot get through.

Solution:

1) try to check if the PPTP Status keep “on” in web status page. If sometimes “on”, and sometimes “down”, please check the PPTP configuration is correct.
2) Check if the PPTP Server assigned remote LAN with H820’s LAN IP network range. H820 default LAN IP is 192.168.8.1, and submask is 255.255.255.0. Sometimes the users forget to assign remote LAN IP 192.168.8.1 for PPTP VPN Server.
   If the PPTP VPN Server’s remote LAN IP is 192.168.1.0/24 or 192.168.0.0/24, and cannot be changed, please change H820 LAN IP from 192.168.8.1 to 192.168.1.1 or 192.168.0.1, also do not forget to manually change the H820 Default Gateway to 192.168.1.1 or 192.168.0.1 meanwhile.

3) with the following steps, normally it can solve the issue. Otherwise, please contact E-Lins Sales or Support.

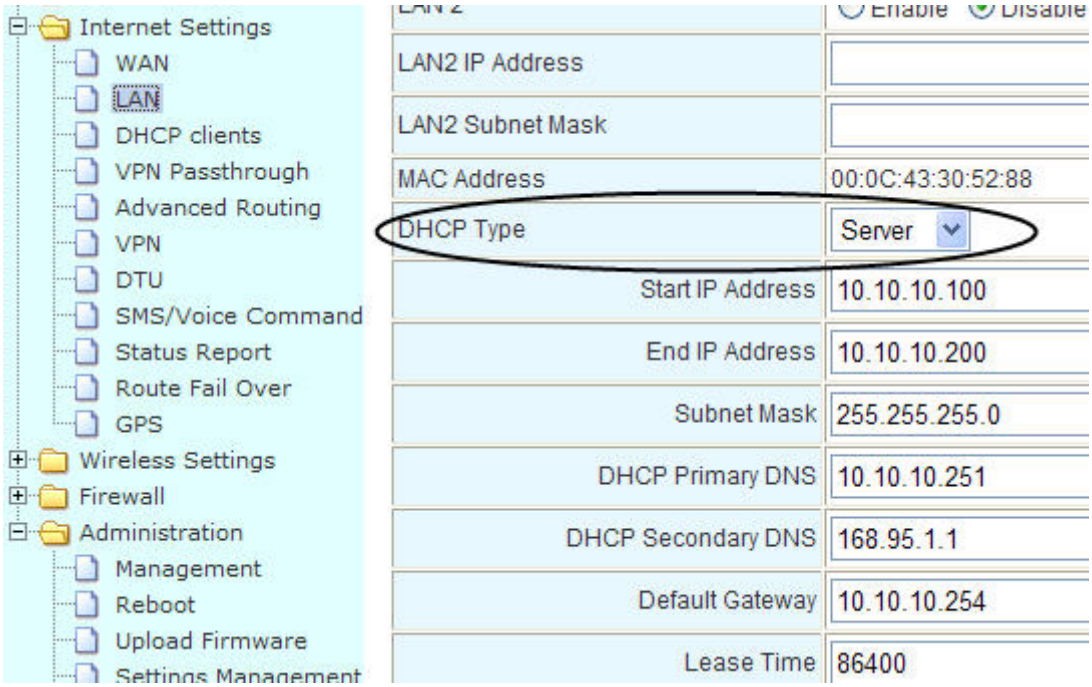
Chapter 5

5 Test Samples

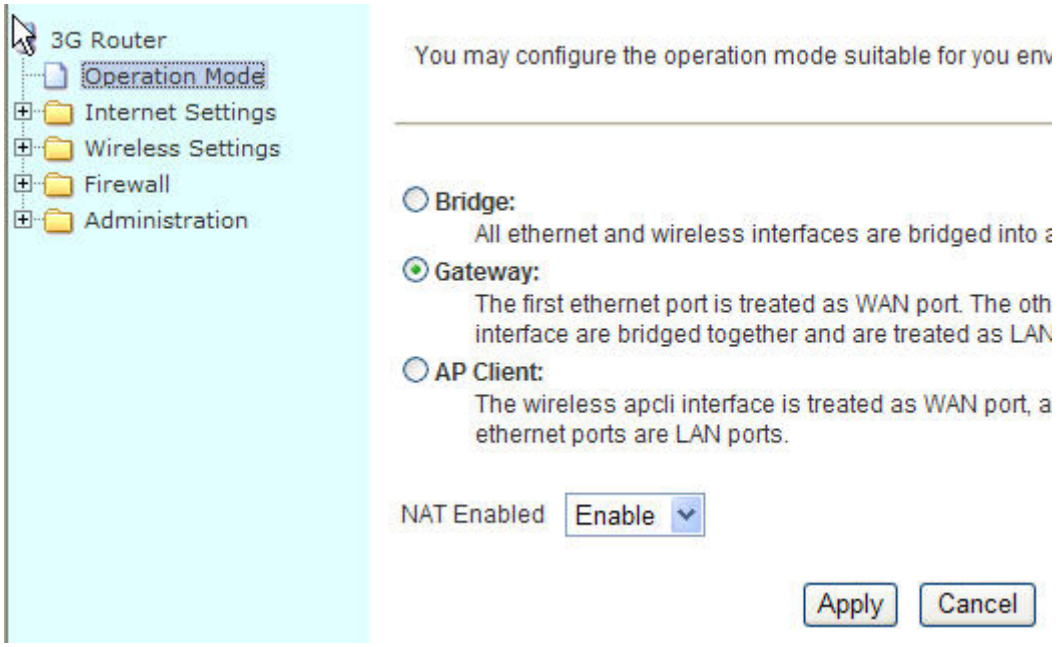
5.1 Two H820 make WiFi hotspot and WiFi client

Here we take H820 router for example. H685 setting method is the same with H820.

1. Take two H820 router. One will be WiFi server, the other will be WiFi Client. We name H820-s and H820-c
2. Connect PC with H820-s with RJ45 cable.
3. At H820-s and H820-c, make sure the DHCP service from both routers are working.

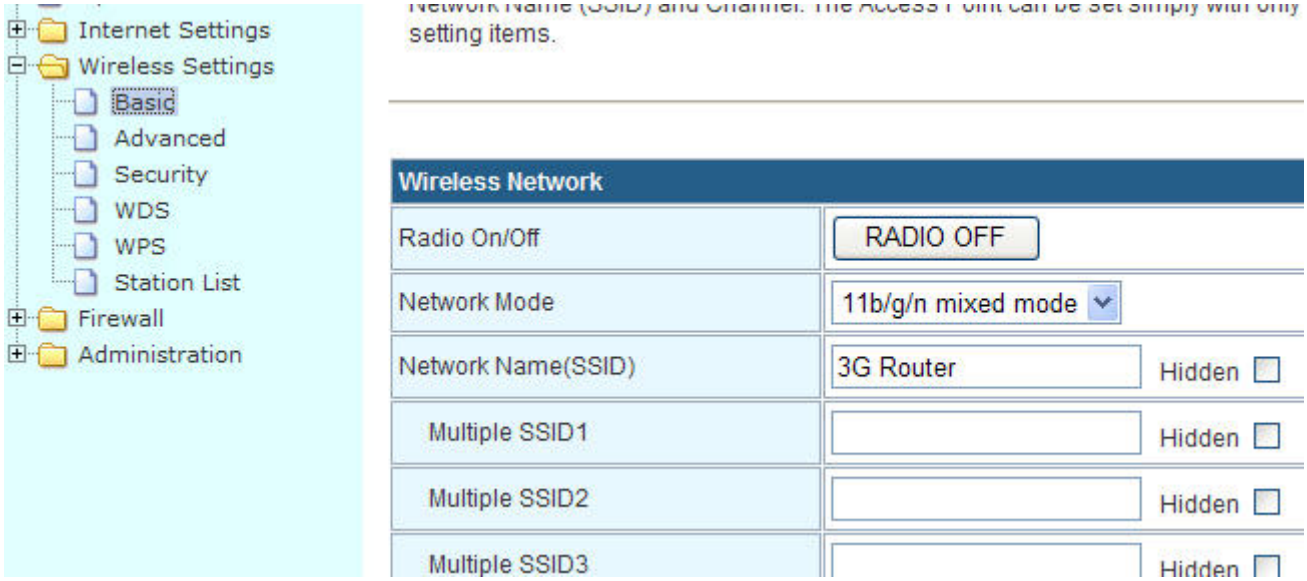


At H820-s,

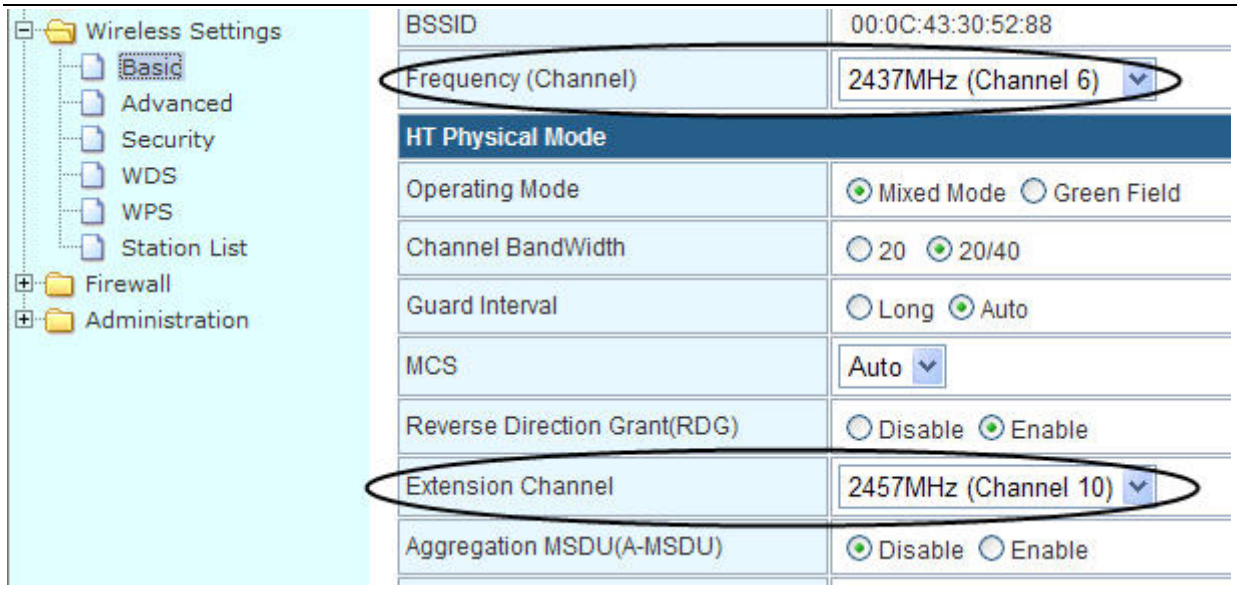


Select “Gateway”, and click “Apply”.

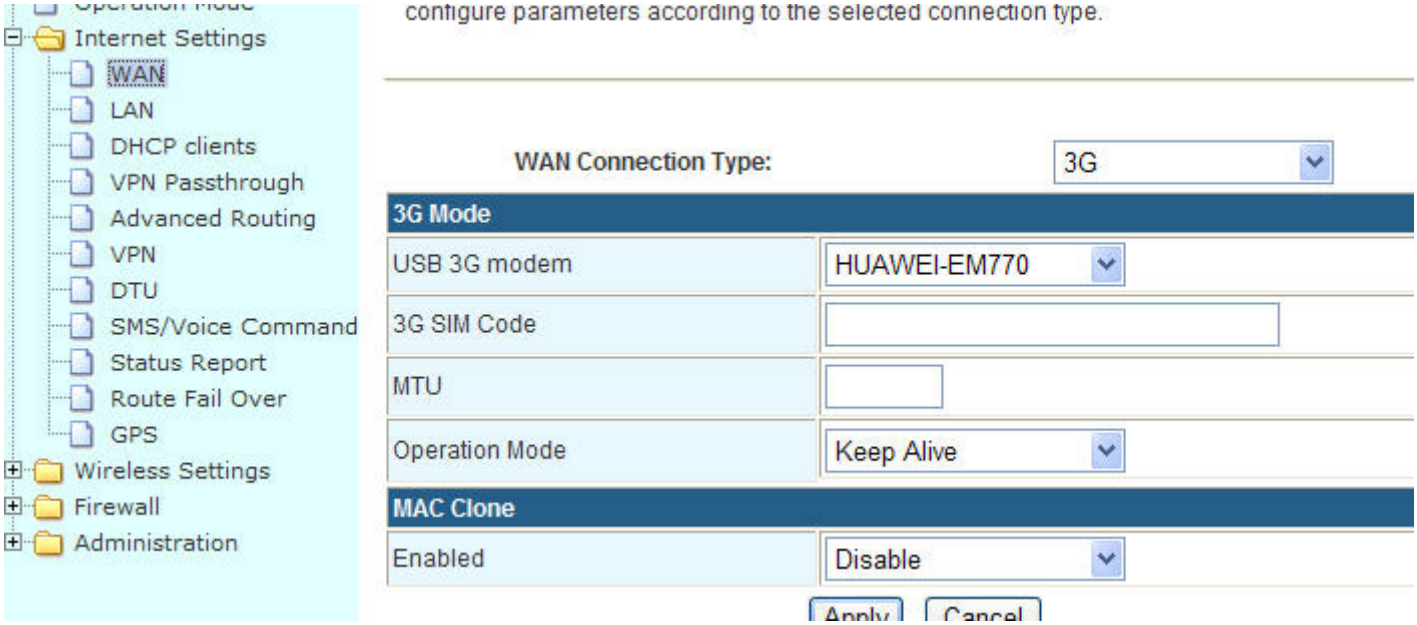
4. At H820-s, “Wireless Settings--Basic”, set Network Name (SSID) as “3G Router” (Here we recommend you use “3G Router” to test first)



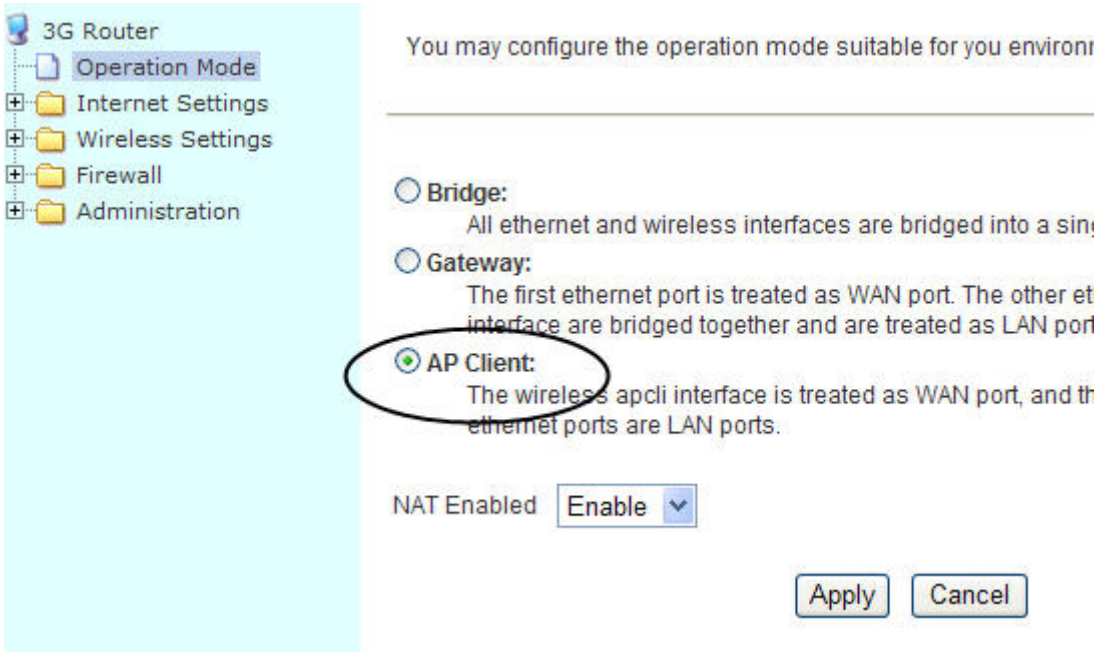
And write down the “Frequency (Channel)” and “Extension Channel”. Remember it and we shall use this value at H820-c.



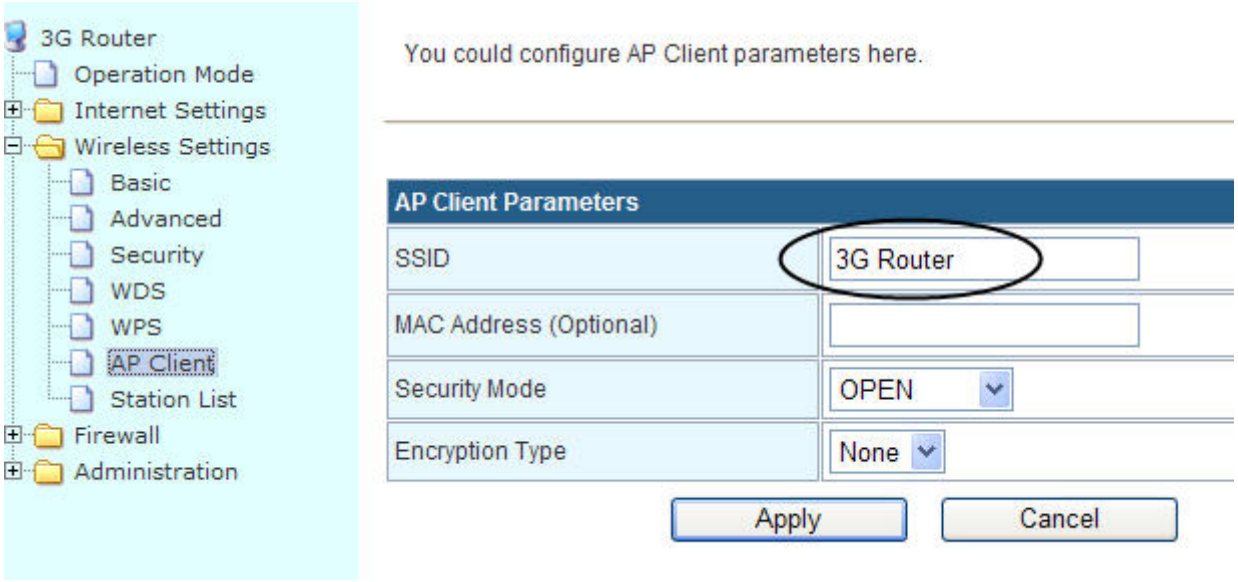
5. At H820-s, “Internet Settings—WAN—WAN Connection Type:”, choose as “3G”, and click “Apply”.



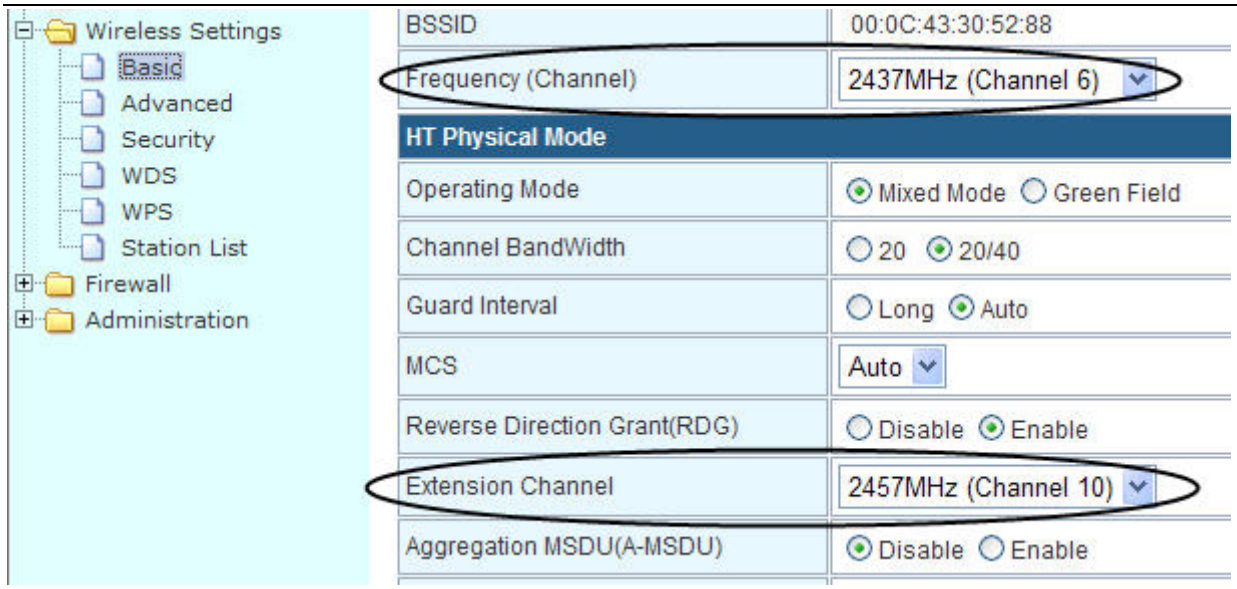
6. Try to connect the H820-s WiFi via your Laptop/PC. If can work, then go to step 7.
7. Connect PC with H820-c with RJ45 cable.
8. at H820-c, “Operation Mode”, choose “AP client”, and click “Apply”


3G Router
Operation Mode
Internet Settings
Wireless Settings
Firewall
Administration
You may configure the operation mode suitable for you environ
Bridge:
All ethernet and wireless interfaces are bridged into a sin
Gateway:
The first ethernet port is treated as WAN port. The other et
interface are bridged together and are treated as LAN port
AP Client:
The wireless apcli interface is treated as WAN port, and th
ethernet ports are LAN ports.
NAT Enabled
Enable
Apply
Cancel

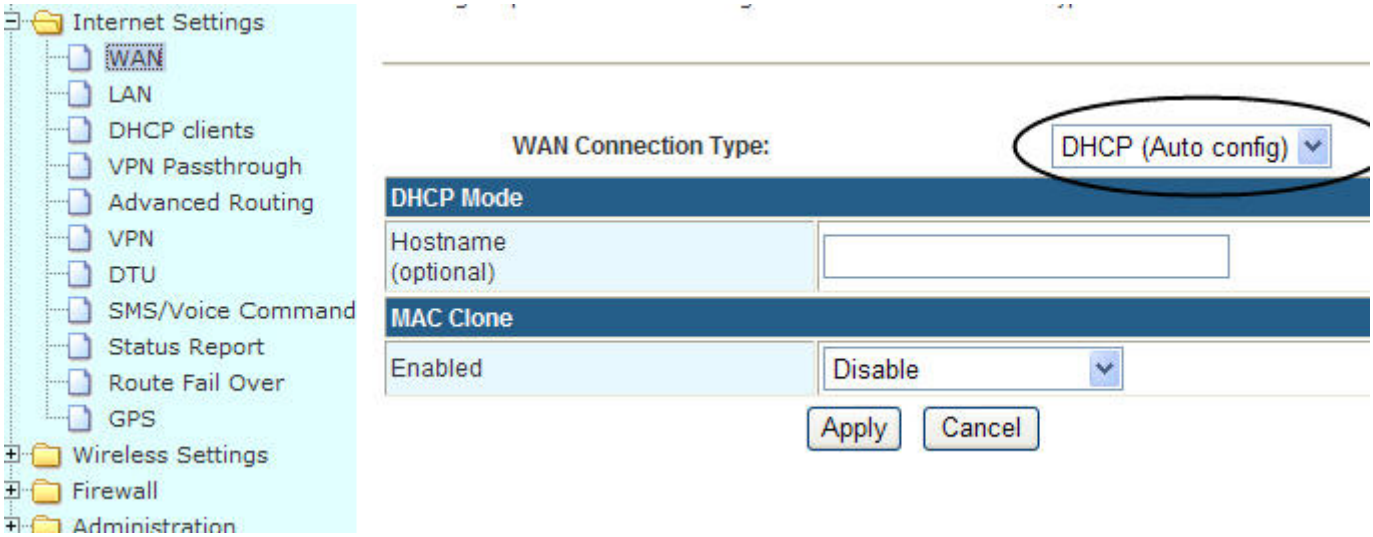
9. at H820-c, “Wireless Settings—AP Client—SSID”, here input the correct one. Here the value is from the H820-s.



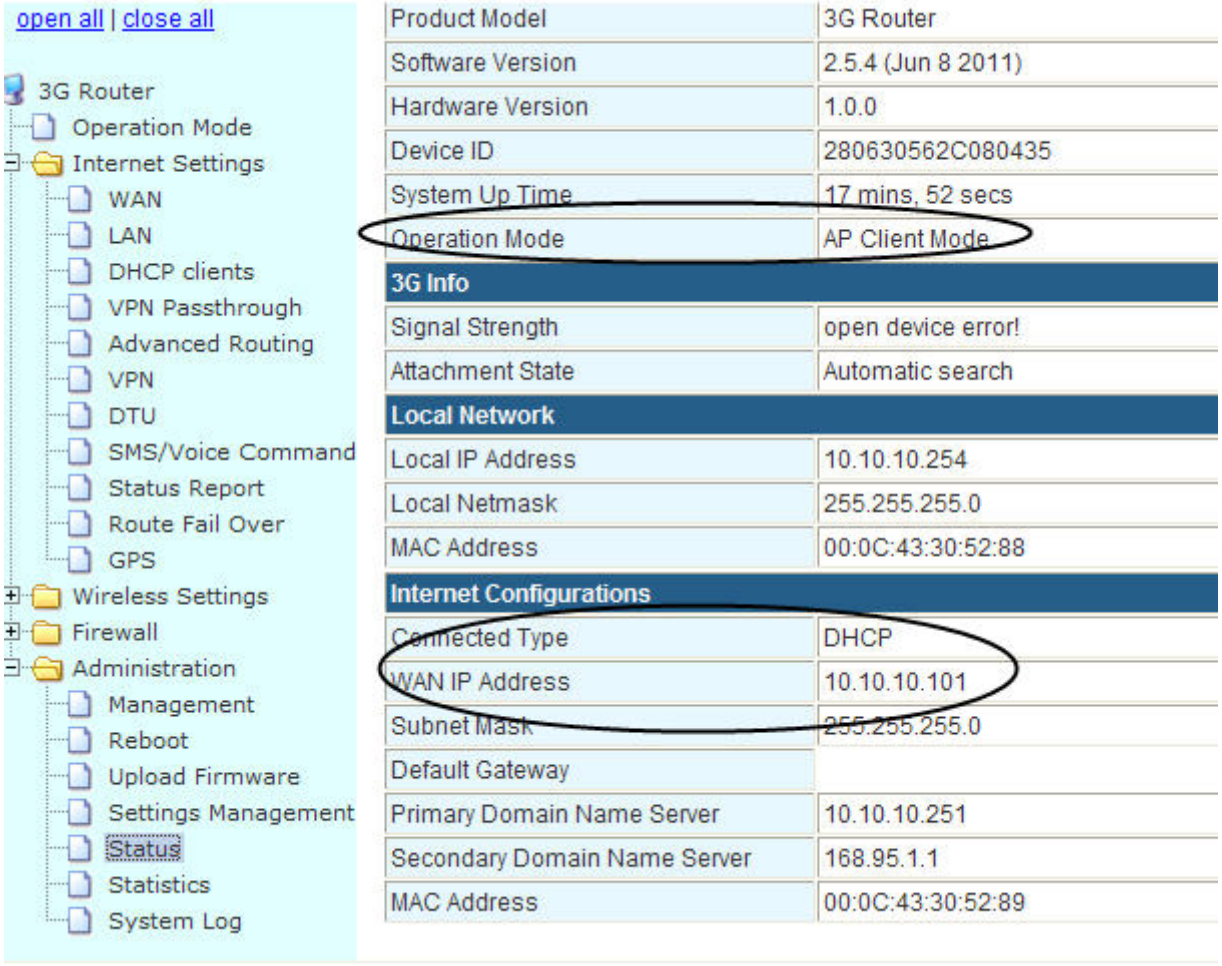
10. at H820-c,
“Frequency (Channel)” and “Extension Channel” should be the same as H820-s



11. at H820-c, “Internet Settings--WAN”, set the WAN connection type as “DHCP (Auto config)”, and click “Apply” button.



12. Then check H820-c, “Administration--Status”, if it shows “Operation Mode” as “AP client Mode” and get “WAN IP Address”, that means the test is working.

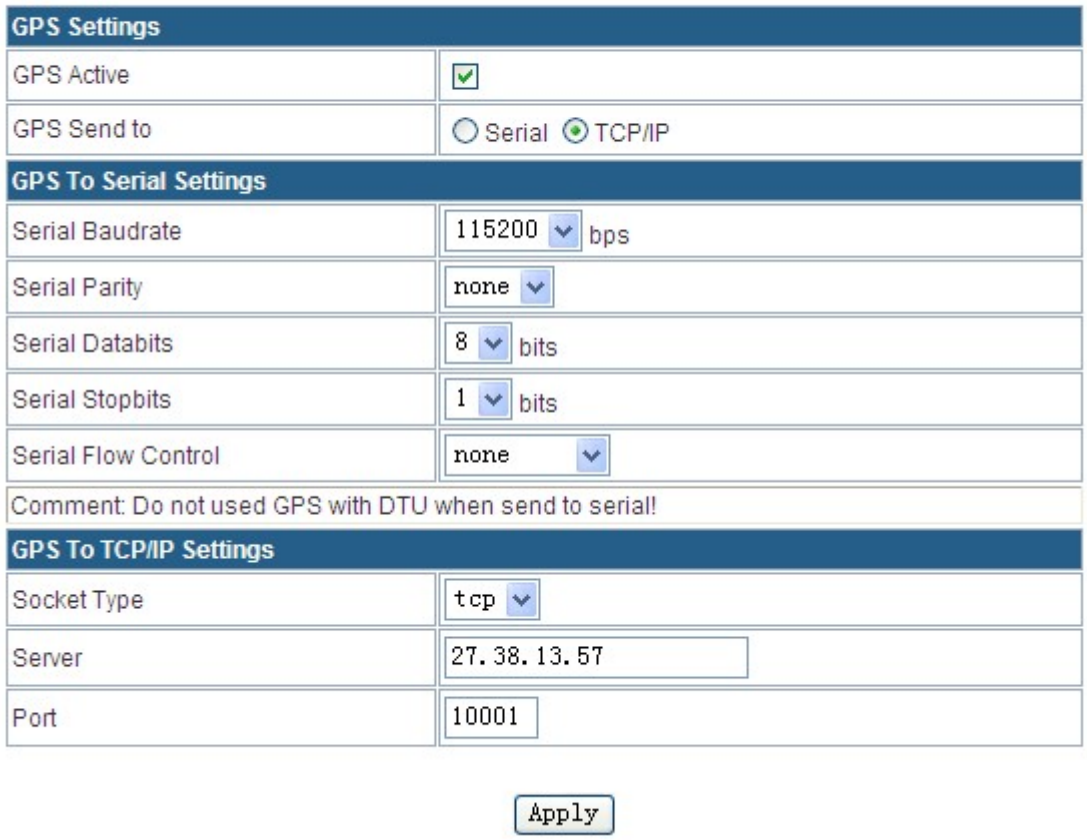


5.2 GPS feature (For version with GPS feature only)

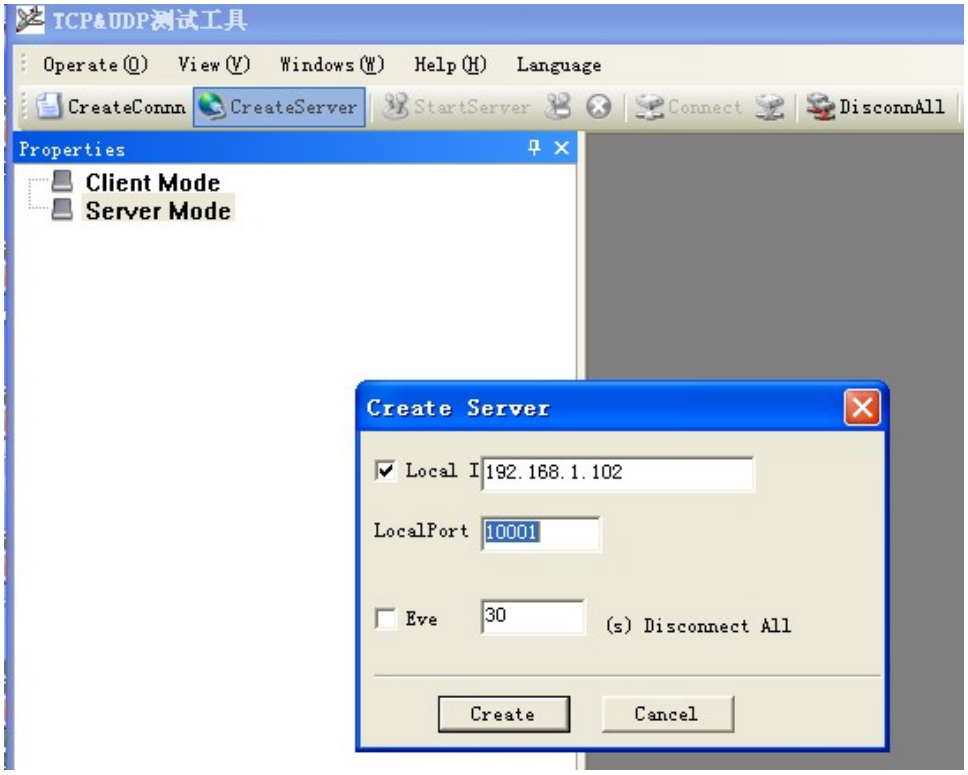
Note: the test is simulation test to approve and show the feature. Please make it work in your real application. Here we run a TCP server tool as the GPS TCP server.

Step1: configure the GPS feature of the router.

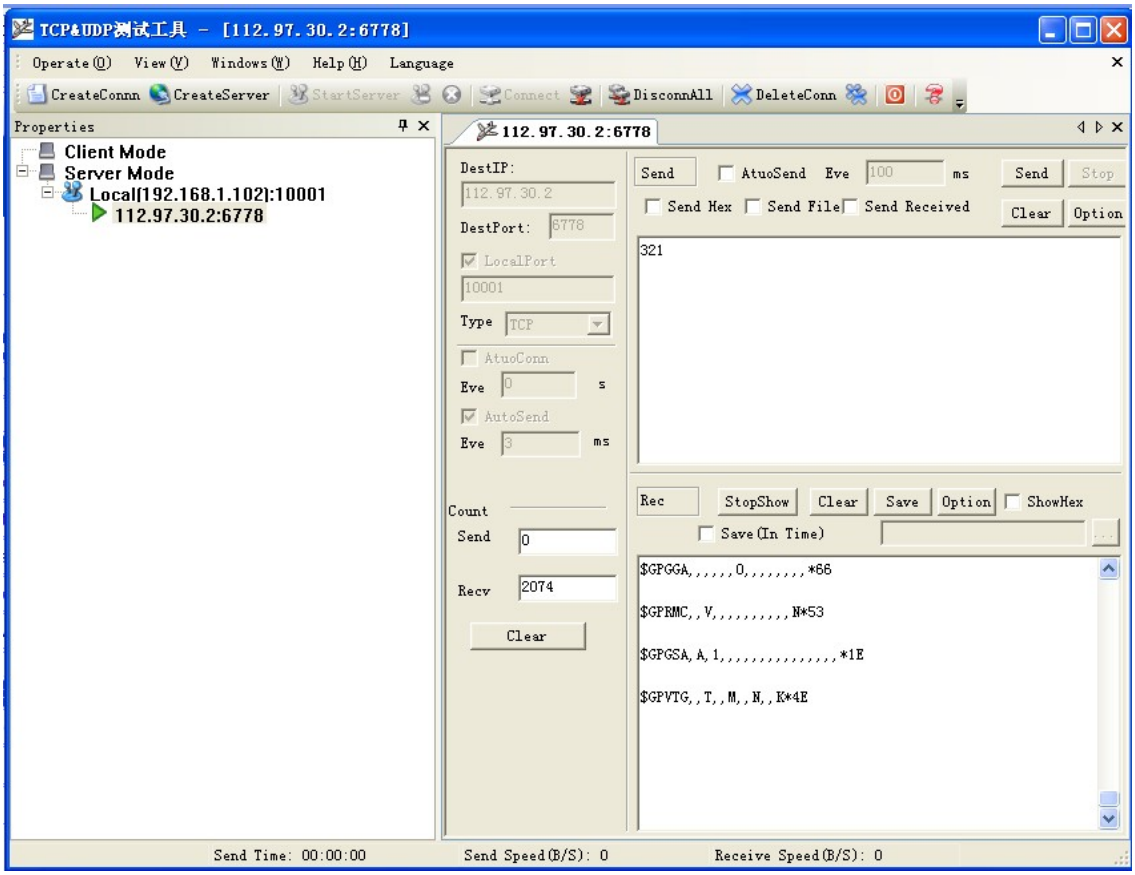
GPS



Step 2: run the TCP server tool. You can ask us to get this tool if you need.
Create server, here our server is a local network PC with IP 192.168.1.102 and port 10001.
And we make a DMZ or NAT for this IP and port from the local router connected to internet with IP 27.38.13.57.
And in the router GPS configuration, we fill in “27.38.13.57” and port “10001”.



Once the link is okay, it will show the following similar screen. If the route doesn't get the satellite, it appears and updates the GPS module info from the router to the TCP GPS server.



```
,*79

$GPGSV,3,3,09,15,12,087,*48

$GPGGA,,,,,,0,,,,,,,,*66

$GPRMC,,V,,,,,,,,,,N*53

$GPGSA,A,1,,,,,,,,,,,,,,,*1E

$GPVTG,,T,,M,,N,,K*4E
```

Picture: Feedback string if not get the satellite.

If the route gets the satellite, it appears and updates the GPS module info from the router to the TCP GPS server with the following similar string.

```
$GPGSV,3,3,10,12,54,144,16,18,52,144,28*79

$GPGGA,142038.0,2237.083418,N,11402.206048,E,1,04,8.9,-
107.0,M,,,,*21

$GPRMC,142038.0,A,2237.083418,N,11402.206048,E,,,091211,
,,A*64

$GPGSA,A,3,18,21,22,31,,,,,,,,,13.5,8.9,10.1*3C

$GPVTG,,T,,M,0.0,N,0.0,K*4E
```

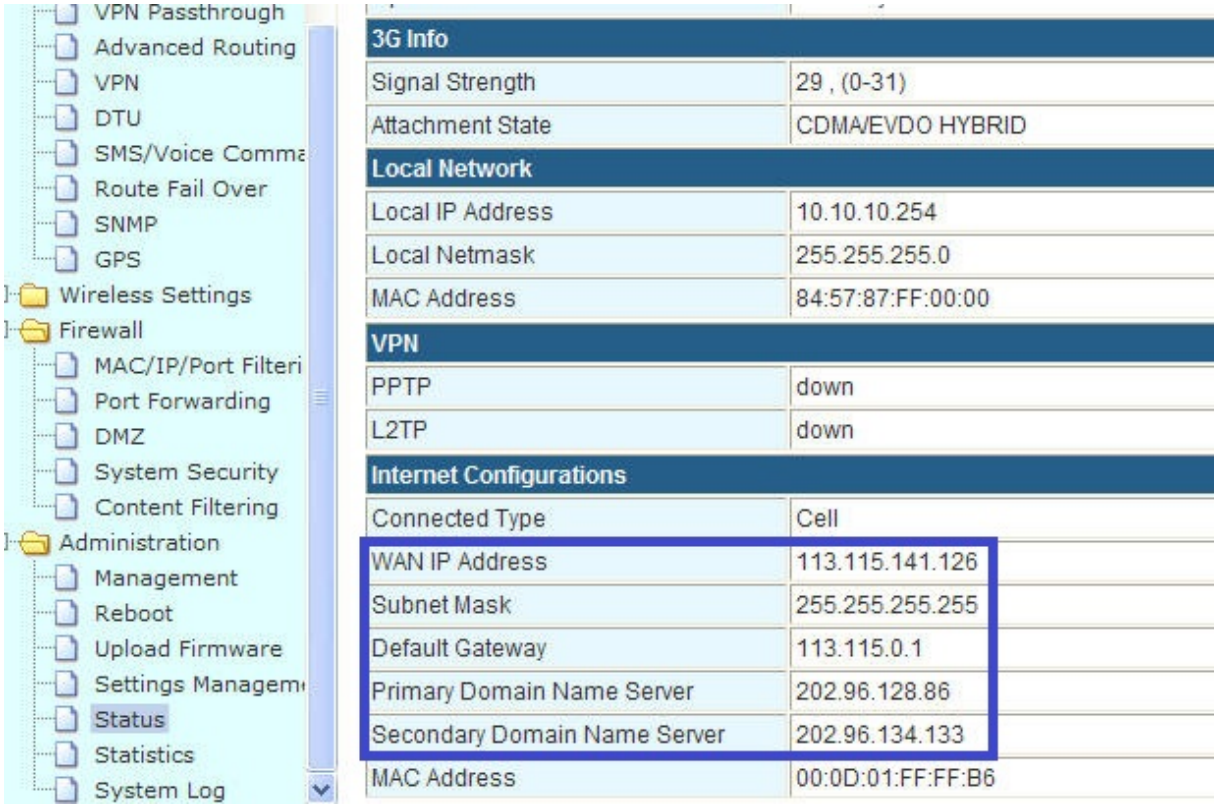
Picture: Feedback string if gets the satellite.

5.3 Port Forwarding (NAT, NAPT) test

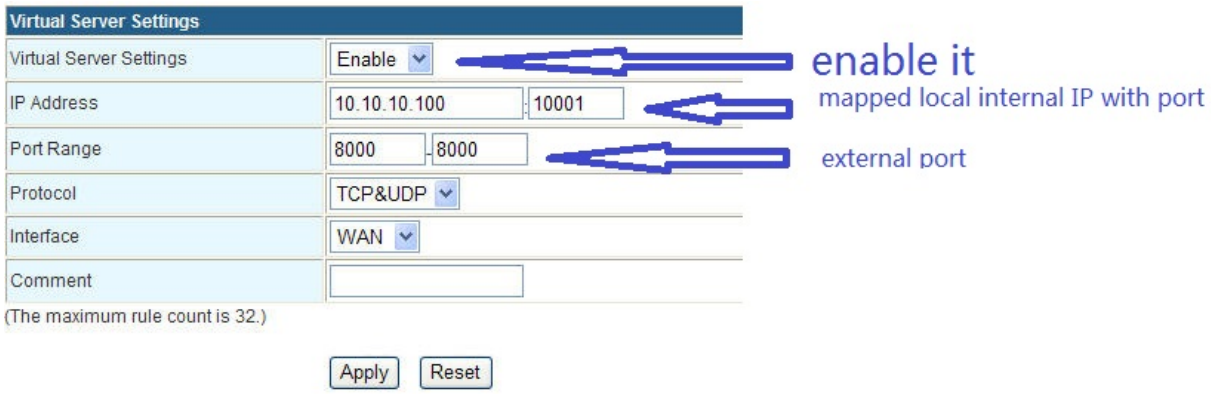
Note: the test is simulation test to approve and show the feature. Please make it work in your real application.

Warmly reminding:
Question: I configure the port forwarding feature correctly, but still no work.
Answer: first, please check the port if block by your ISP, because some ISP block some ports for security reason. For example, the H820 gets WAN IP 27.38.14.223. And the H820's default web port is 80. So from the other network, try to visit http:// 27.38.14.223:80 if can be okay. If no okay, it means the ISP blocks the 80 port. Then check with your ISP which ports are open for use. Then re-try the port forwarding feature.

Step 1) make H820 router to be online.



Step 2) configure the *port forwarding* feature for H820 router



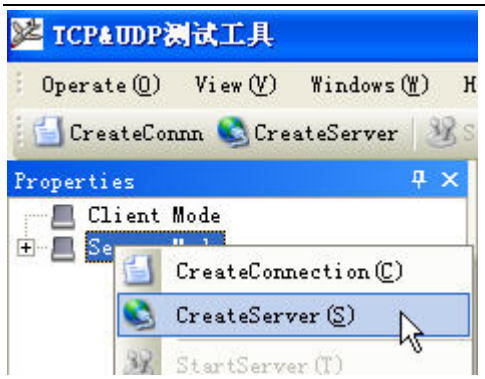
Click *Apply Button* to finish the setting. It will show the result in the following picture.

Current Virtual Servers in system:
No. IP Address Port Range Protocol Interface Comment
1 10.10.10.100:10001 8000 - 8000 TCP + UDP WAN
Delete Selected
Reset

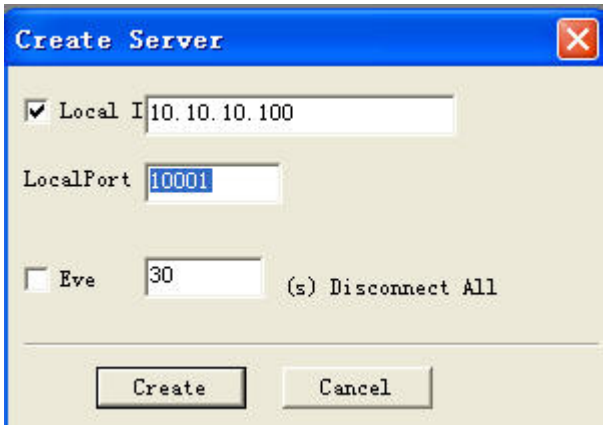
Step 3) here we take a PC to be as a TCP server/Remote Device.

Connect the PC to H820 router LAN port via RJ45 cable. And it gets an IP 10.10.10.100.

At the PC, run *TCP&UDP_debug* software (If you have no such software, require to get from us).



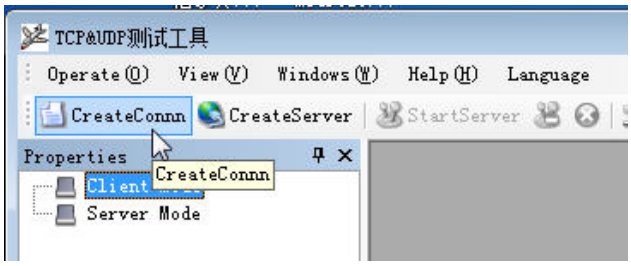
Firstly, click *Server Mode*, and *CreateServer,*



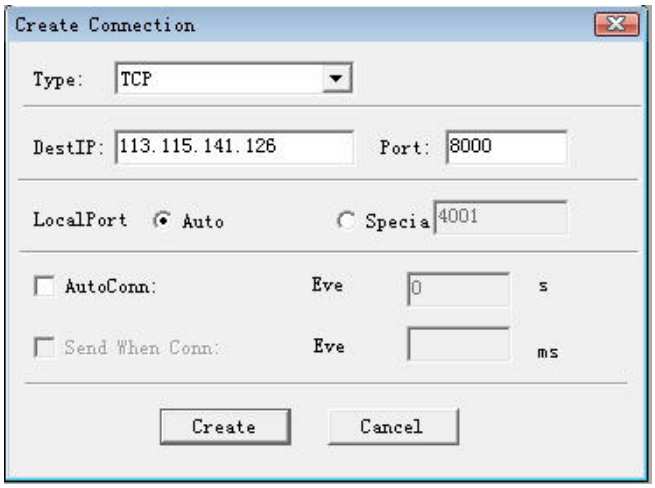
Secondly, fill in the parameters like this. The *Local IP* is the PC's IP from H820 router. The *LocalPort* is the port of the PC which will be mapped. Click *Create Button* to finish.

Choose the created server, and click *StartServer*. It will show the following windows.

Step 4) here we take another PC to be as a TCP client.
This PC is with internet in another network. Run *TCPUDP_debug* software tool, choose *Client Mode*,

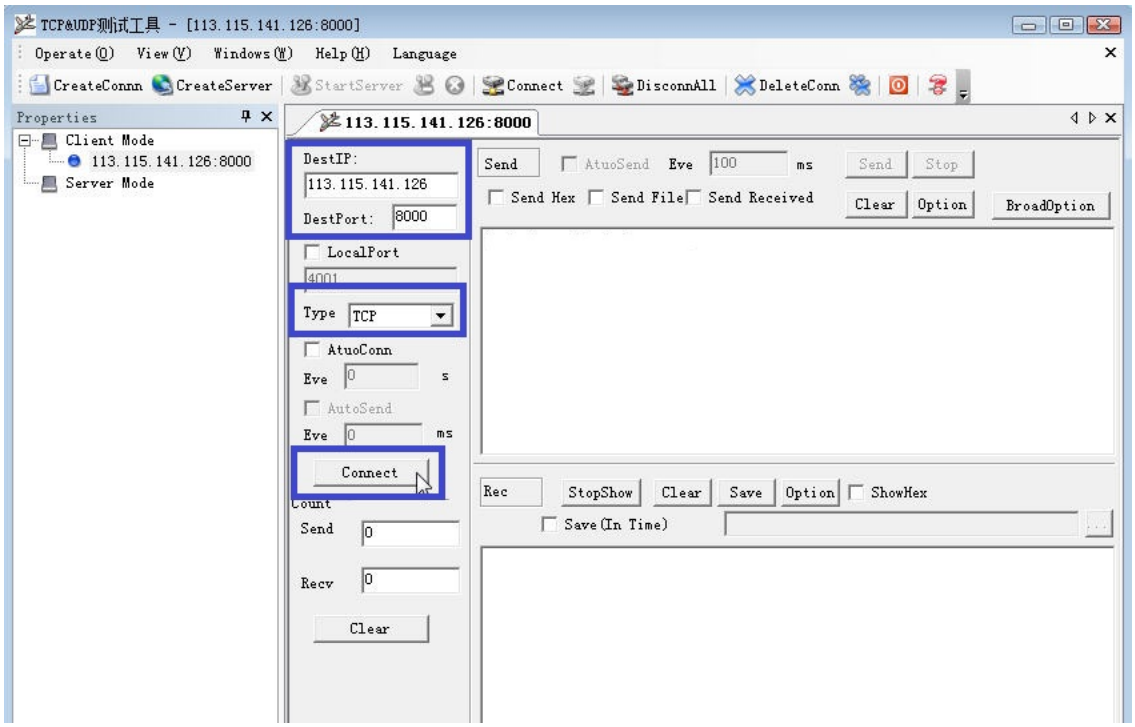


and click *CreateConn*,

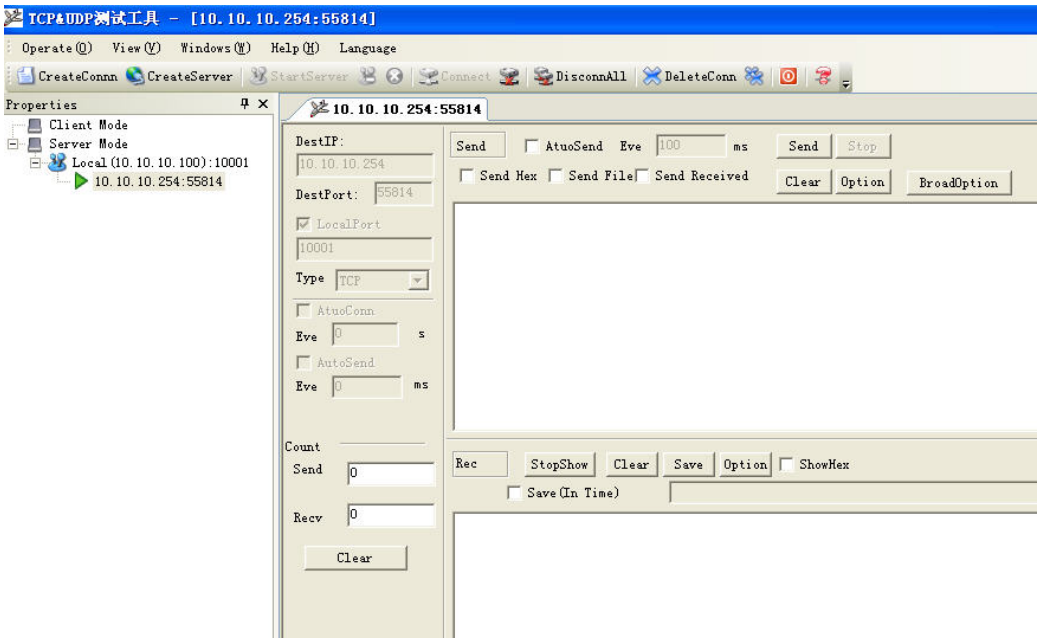


Type: choose TCP, DestIP: fill in the H820 router's WAN IP (here is 113.115.141.126), Port: 8000 (This port is external port for mapped port 10001). Click *Create* button to finish.

Then check the DestIP, DestPort and Type, and click *Connect* button to link.

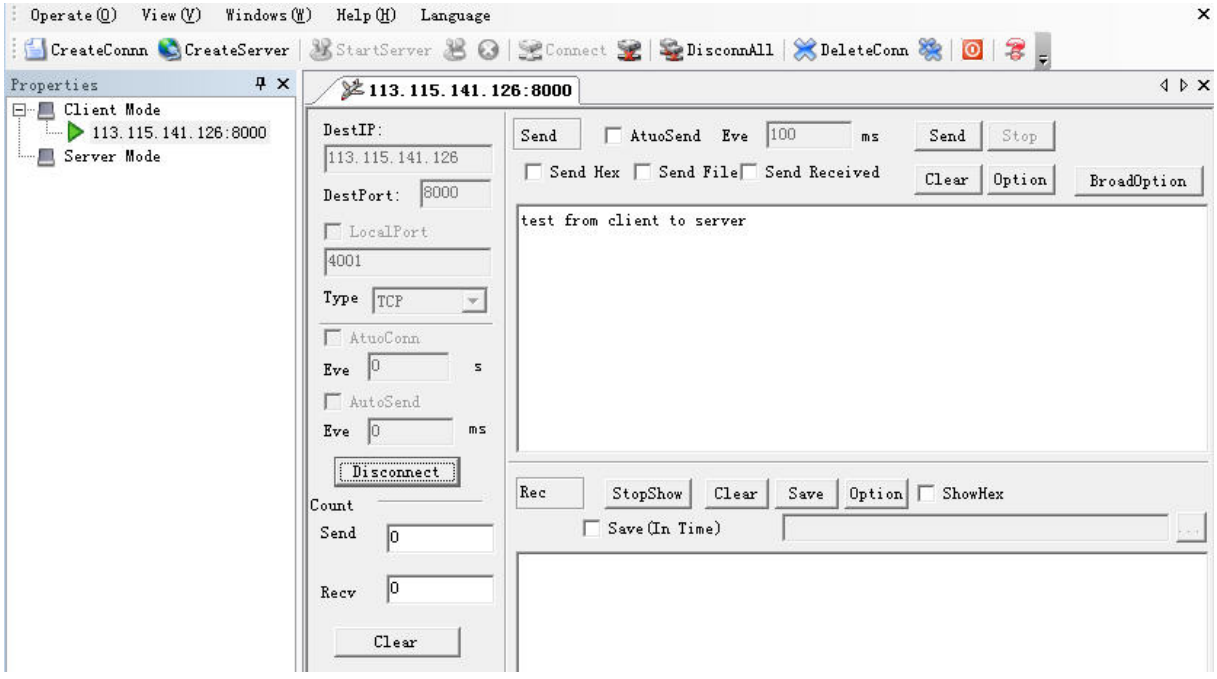


Once the link is done, at the Server PC's side, it shows the following picture, which indicates the link is created.

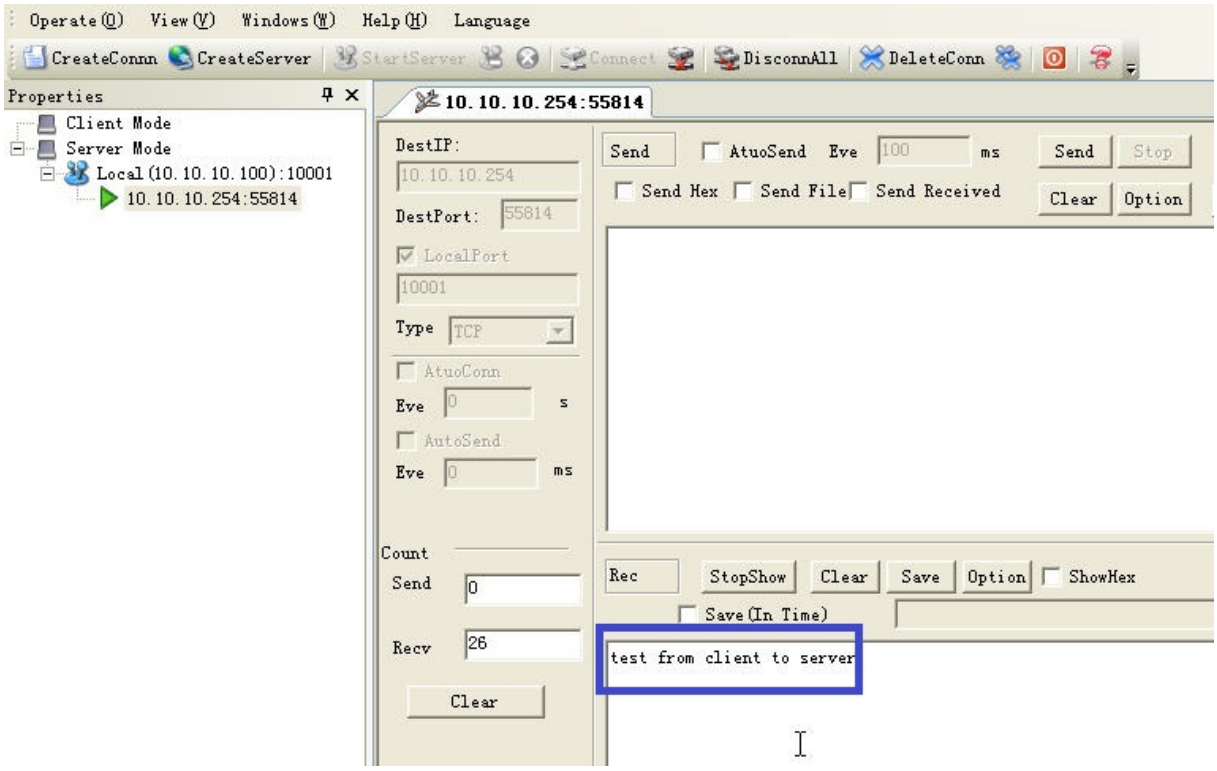


Step 5) Test the link for sending and receiving

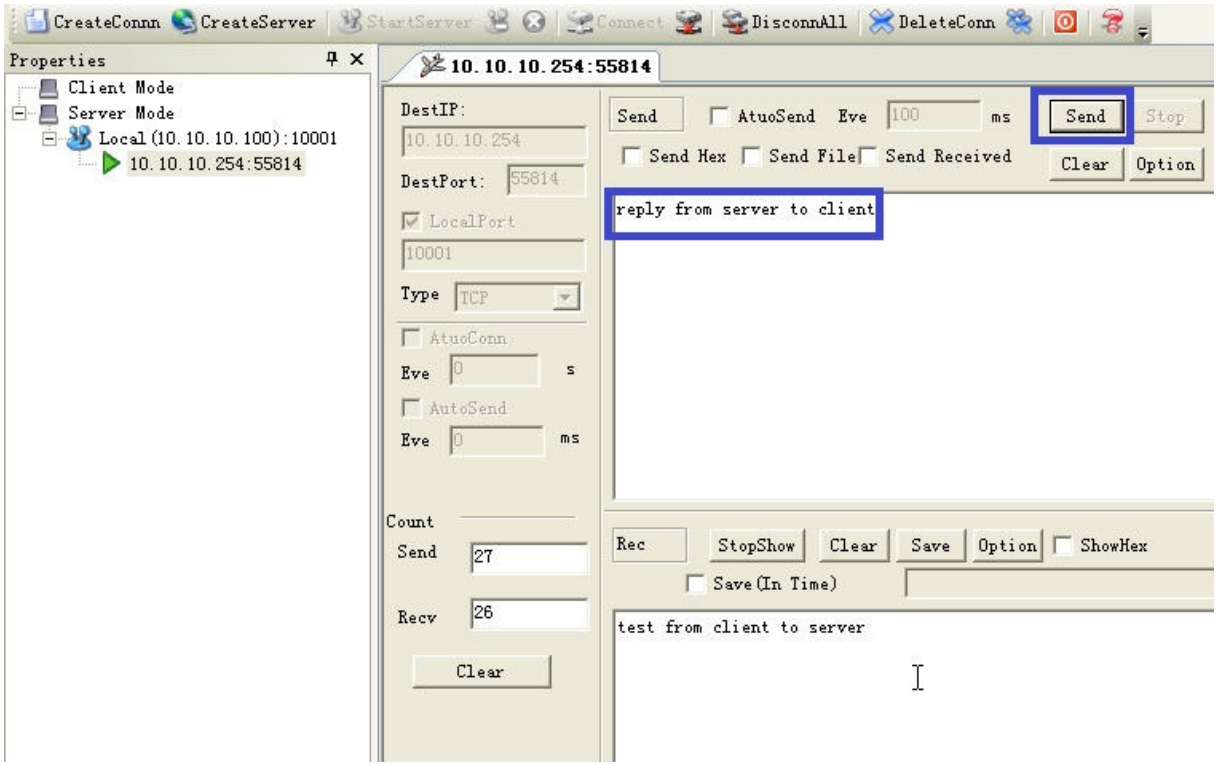
At client PC, type "test from client to server", and click *Send* button.



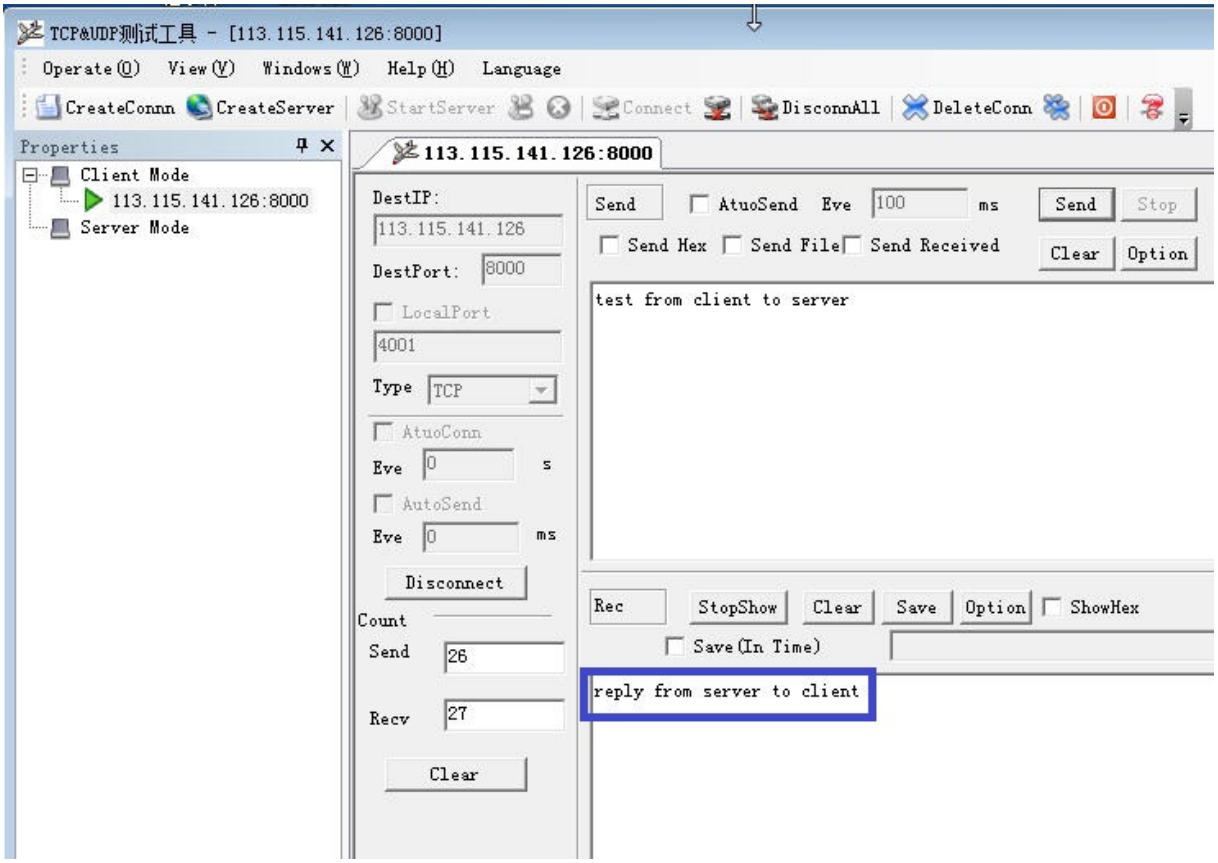
At the server PC, it will receive the info the client PC.



At Server PC, type “reply from server to client”, and click *Send* button.



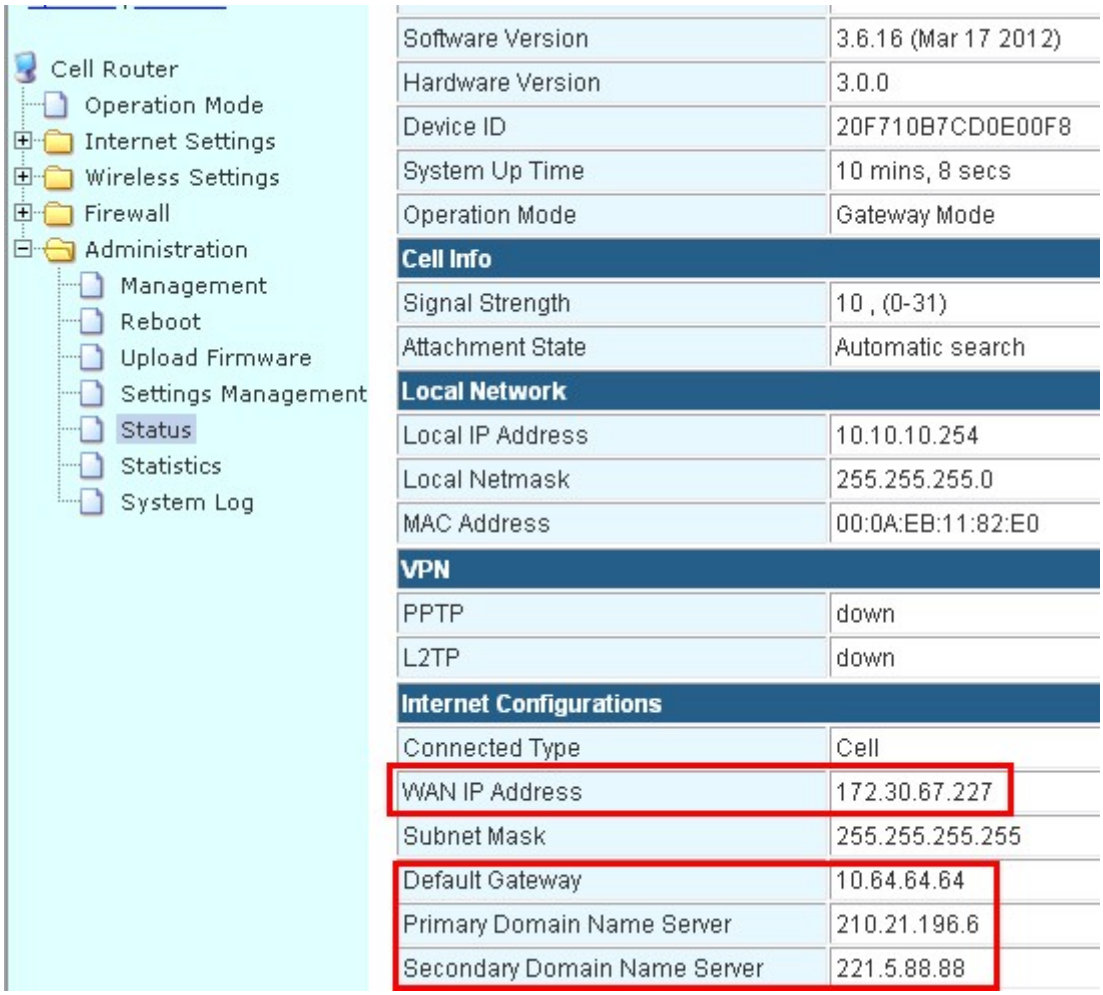
At the client PC side, it will receive the related info from server PC side.



With this result, it indicates the port forwarding is working.

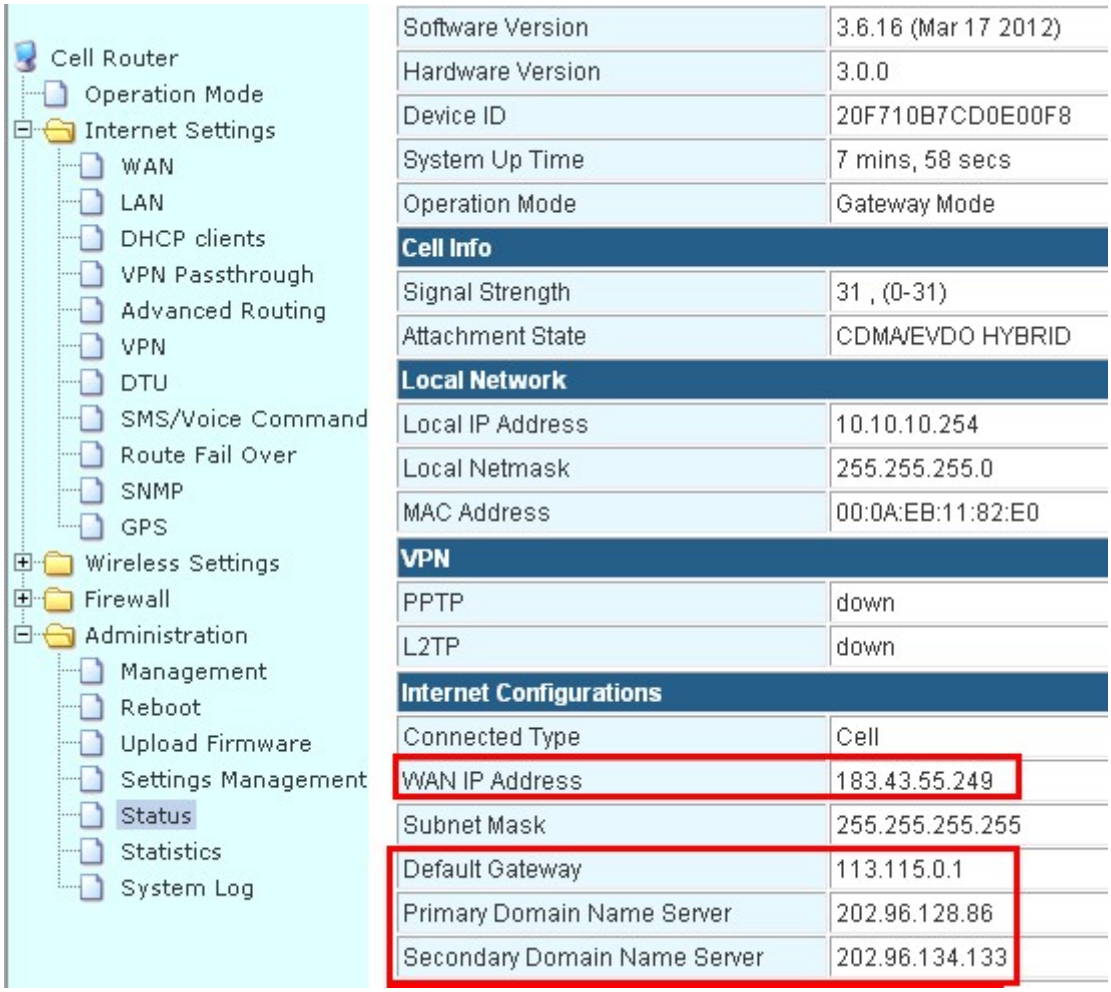
5.4 Remote Web Login

Step 1) make H820 router to be online and get a public WAN IP.



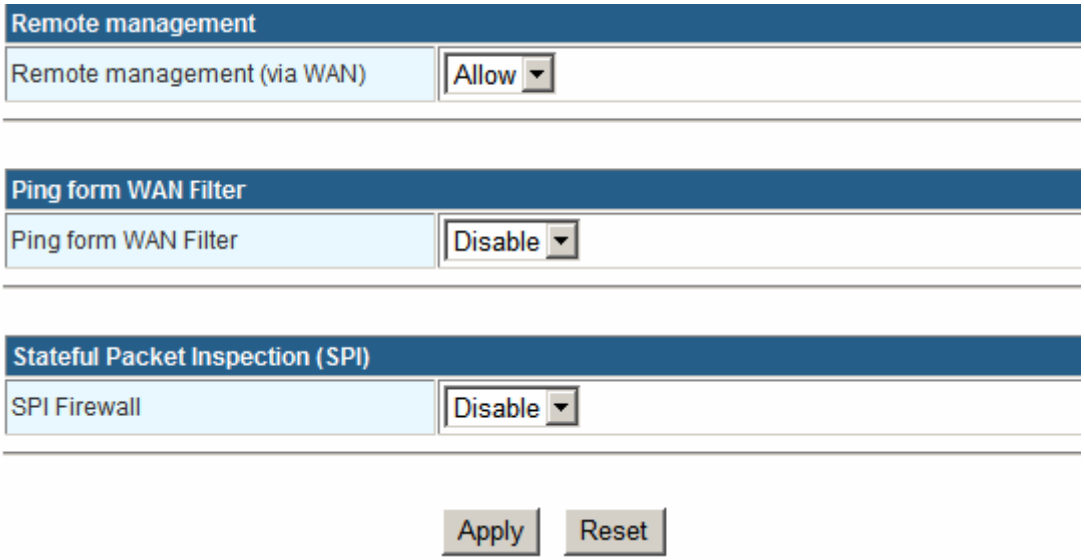
Here the H820 router gets WAN IP of 172.30.67.227, which is not a public IP, and cannot be ping through via the test PC. So we cannot make the remote visit of the H820 router web.

Let's get a public IP for H820 router first. Here we change another sim card to test.



H820 router gets a WAN IP 183.43.55.249, which is a public IP, and can ping though.

Step 2) Make sure the “Remote Management” feature is activated.

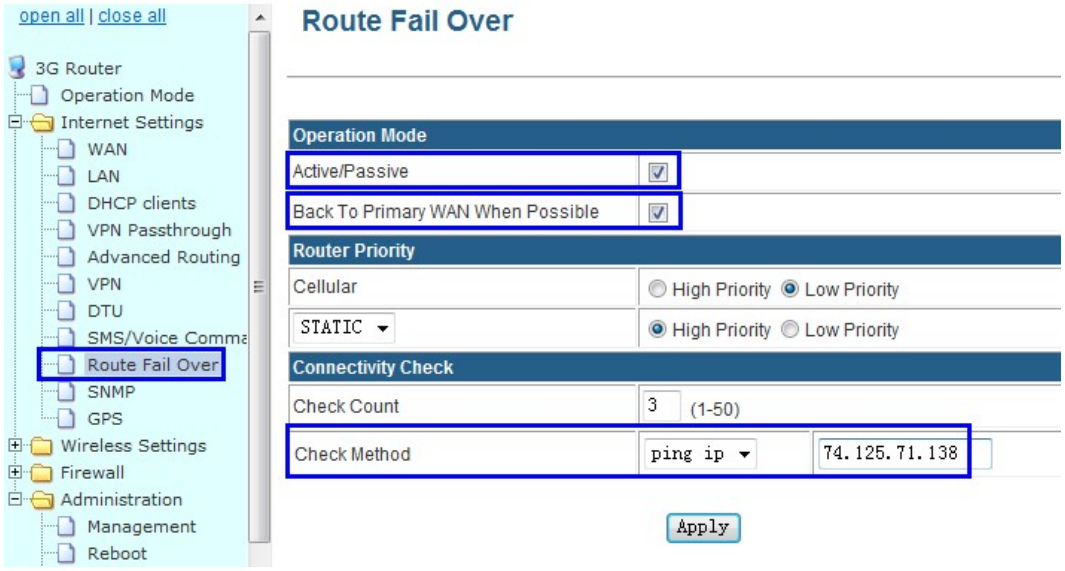


Step 3) at the test PC, open the IE, and input http://183.43.55.249:80 to enter the H820 router's web.

Notes:
1) The H820 router's web port default is 80. Some ISP block the port 80 because of some security. Then please confirm the ISP the opened port, and change the web port for H820 router before remote visiting.
Please refer to *Chapter 3.3.14.1.1 Router web port* to change the web port.
2) If you cannot get a fixed public WAN IP, you can use H820 router's DDNS feature. Refer to *chapter 3.3.14.1.3 DDNS settings* to configure.
Then you can input http://ddns:port to visit the H820 router's web port.

5.5 WAN RJ45 Static (fixed IP) and Cellular Fail Over backup redundancy

Please connect the RJ45 WAN port and the upper Router LAN RJ45 port via RJ45 cable. The H820 WAN LED should be on.
Step 1) log into the H820 router web.
Step 2) Internet Settings – Route Fail Over



Active/Pasive: tick it

Back To Primary WAN When Possible: tick it (if you activate this, the router will automatically switch to primary main line from secondary line if primary main line resume to work. If you don't activate this, the router will keep working in secondary line if primary line fails.)

Router Priority: You can select main line and secondary line for Cellular and WAN RJ45 "STATIC/DHCP/PPPoE"

For example, here we set Cellular as secondary line, and WAN RJ45 STATIC as main line. Then choose as the picture above.

Check Count: fill in the number you want to check the line available detection.

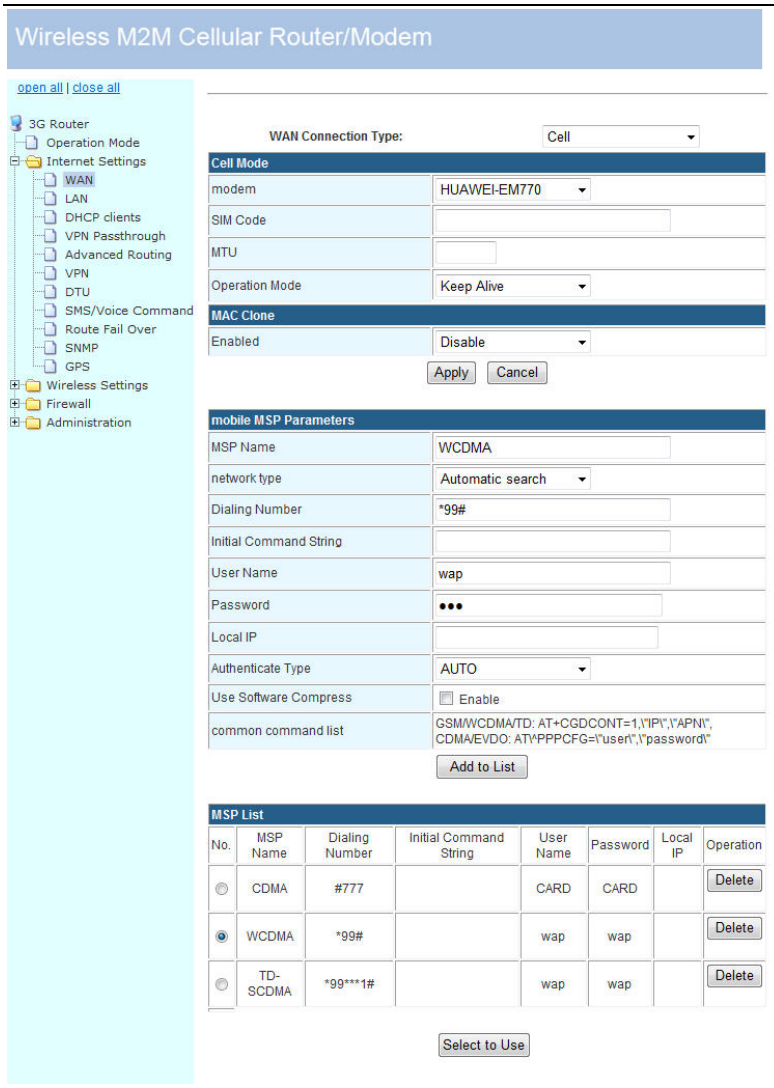
Checking Method: fill in a public IP address that can be ping through.

With the above configuration, the router will try to ping IP 74. 125.71.138 and if cannot be through for 3 times continuously, it will switch to secondary line.

Step 3) Internet Settings – WAN – WAN Connection Type – Cell.

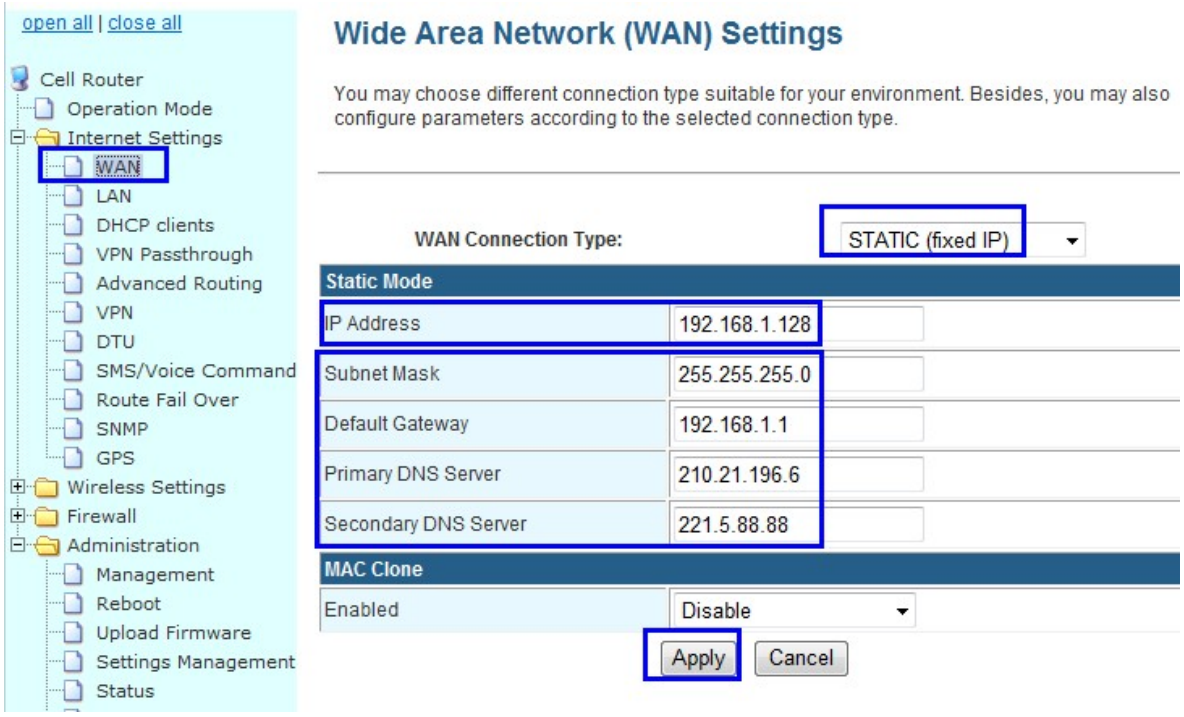
Configure the Cell WAN parameters.

Please make sure H820 can be Cell online after this configuration. Otherwise the fail over feature will not work in redundancy



Step 4) Internet Settings – WAN – WAN Connection Type – STATIC (fixed IP)

Configure the STATIC (fixed IP),



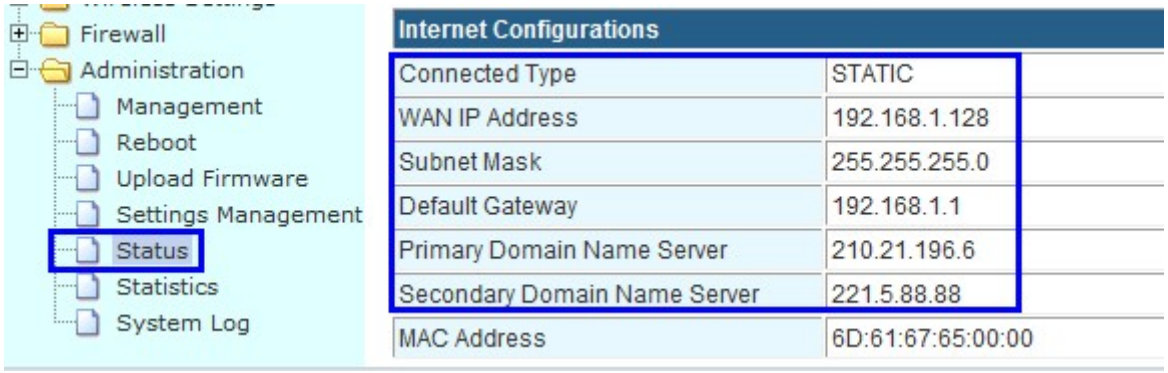
IP Address: fill in the assigned fixed LAN IP address from the upper router for H820. Here our upper router can assign a fixed LAN IP 192.168.1.128 for H820.

Subnet Mask: the upper router's subnet mask.
Default Gateway: fill in the default gateway. Here the default gateway is 192.168.1.1 of upper router.
Primary DNS Server: fill in a right DNS server
Secondary DNS Server: fill in a right DNS server.

Notes: Do not forget to click "Apply" button.

Step 5) The H820 router will automatically reboot and try to connect the STATIC WAN RJ45 as main line. If main line failed, it will switch to Cell as secondary line. And if STATIC WAN RJ45 resume to work, it will switch from Cell line to STATIC WAN RJ45 line.

The following page indicated the Static fixed IP is working.



Once the Static (fixed IP) is failed, H820 will switch to cellular automatically as follows,

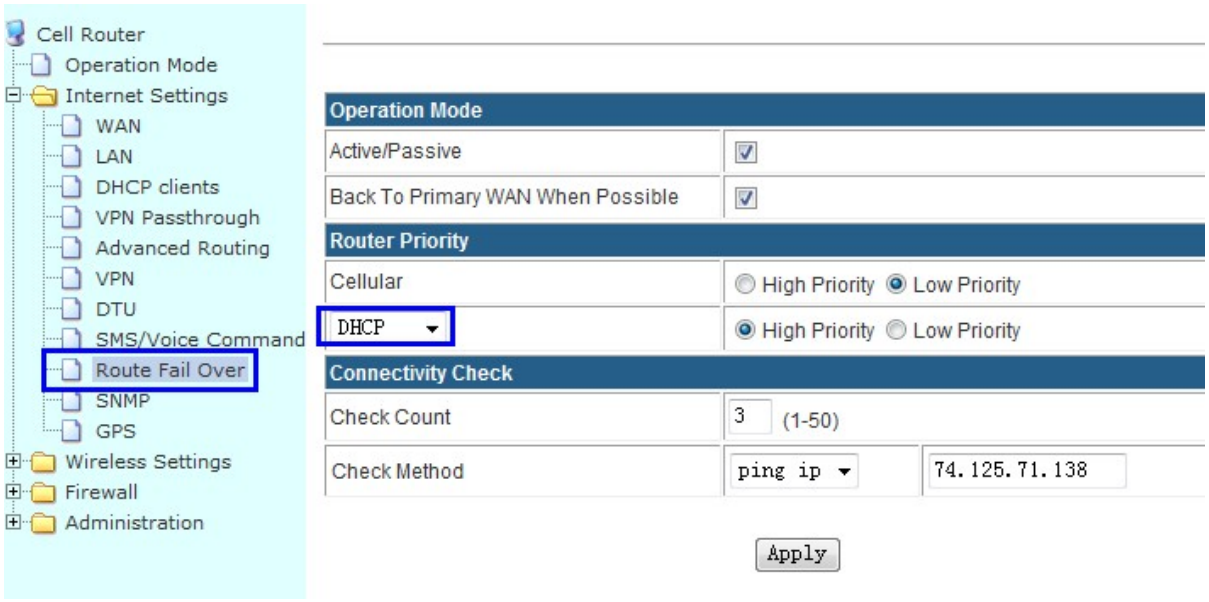
Internet Configurations	
Connected Type	Cell
WAN IP Address	172.20.5.78
Subnet Mask	255.255.255.255
Default Gateway	10.64.64.64
Primary Domain Name Server	210.21.196.6
Secondary Domain Name Server	221.5.88.88
MAC Address	6D:61:67:65:00:00

5.6 WAN RJ45 DHCP and Cellular Fail Over backup redundancy

Please connect the RJ45 WAN port and the upper Router LAN RJ45 port via RJ45 cable. The H820 WAN LED should be on.

Step 1) log into the H820 router web.

Step 2) Internet Settings – Route Fail Over



Active/Pasive: tick it

Back To Primary WAN When Possible: tick it (if you activate this, the router will automatically switch to primary main line from secondary line if primary main line resume to work. If you don't activate this, the router will keep working in secondary line if primary line fails.)

Router Priority: You can select main line and secondary line for Cellular and WAN RJ45 "STATIC/DHCP/PPPoE"

For example, here we set Cellular as secondary line, and WAN RJ45 DHCP as main line. Then choose as the picture above.

Check Count: fill in the number you want to check the line available detection.

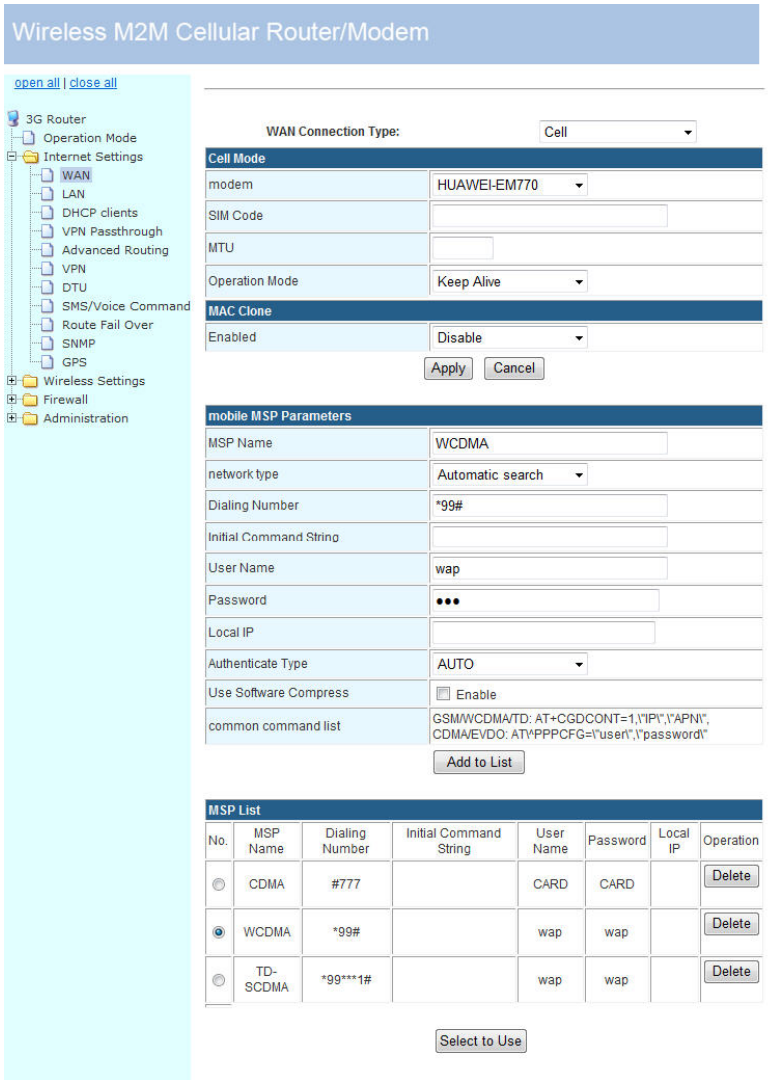
Checking Method: fill in a public IP address that can be ping through.

With the above configuration, the router will try to ping IP 74. 125.71.138 and if cannot be through for 3 times continuously, it will switch to secondary line.

Step 3) Internet Settings – WAN – WAN Connection Type – Cell.

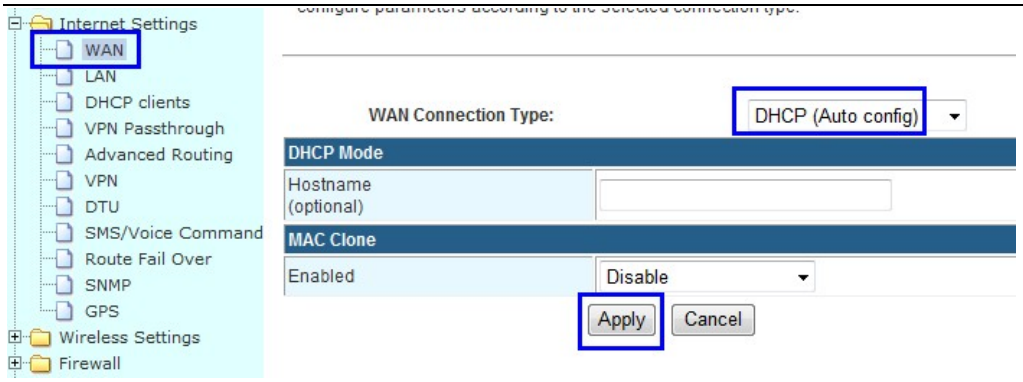
Configure the Cell WAN parameters.

Please make sure H820 can be Cell online after this configuration. Otherwise the fail over feature will not work in redundancy



Step 4) Internet Settings – WAN – WAN Connection Type – DHCP (Auto config)

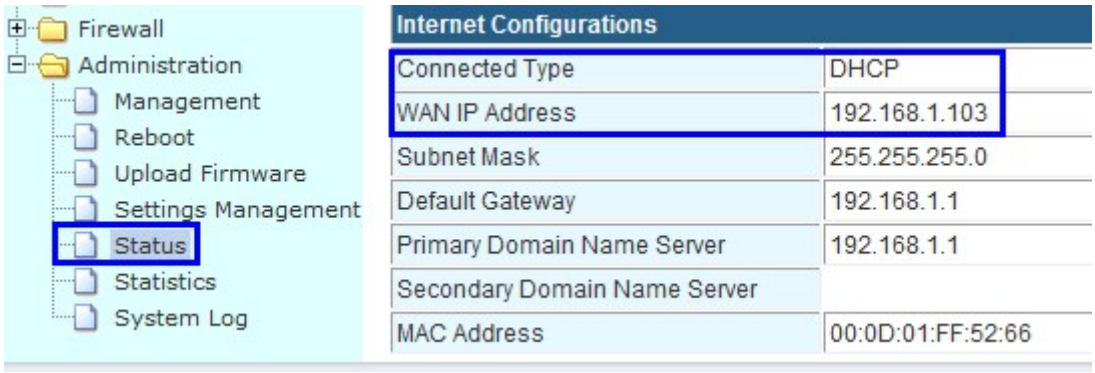
Choose “DHCP (Auto config)” at WAN Connection Type, and click “Apply” button



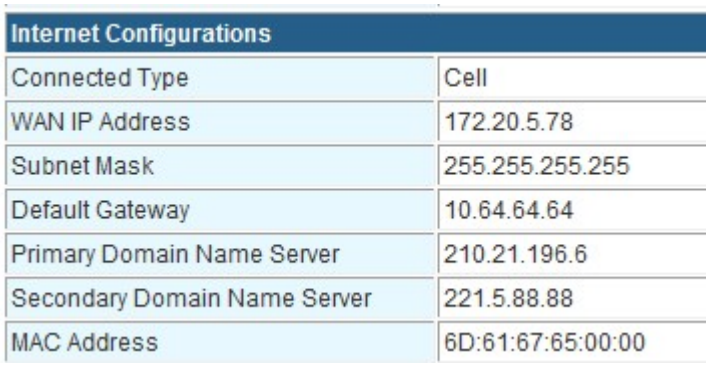
Notes: Do not forget to click “Apply” button.

Step 5) The H820 router will automatically reboot and try to connect the DHCP WAN RJ45 as main line. If main line failed, it will switch to Cell as secondary line. And if DHCP WAN RJ45 resume to work, it will switch from Cell line to DHCP WAN RJ45 line.

The following page indicated the DHCP is working.



Once the DHCP (Auto config) is failed, H820 will switch to cellular automatically as follows,



Notes: if the DHCP cannot get WAN IP Address, please “Load Default” for H820 router to retry.

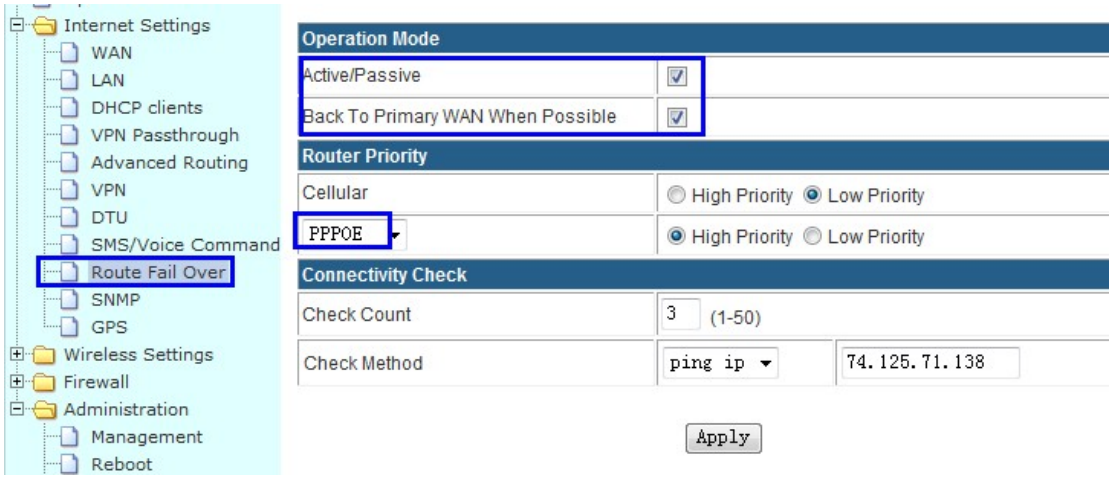
5.7 WAN RJ45 PPPoE and Cellular Fail Over backup redundancy

Please connect the RJ45 WAN port and the ADSL modem RJ45 port via RJ45 cable. The H820 WAN LED

should be on.

Step 1) log into the H820 router web.

Step 2) Internet Settings – Route Fail Over



Active/Pasive: tick it

Back To Primary WAN When Possible: tick it (if you activate this, the router will automatically switch to primary main line from secondary line if primary main line resume to work. If you don't activate this, the router will keep working in secondary line if primary line fails.)

Router Priority: You can select main line and secondary line for Cellular and WAN RJ45 "STATIC/DHCP/PPPoE"

For example, here we set Cellular as secondary line, and WAN RJ45 PPPOE as main line. Then choose as the picture above.

Check Count: fill in the number you want to check the line available detection.

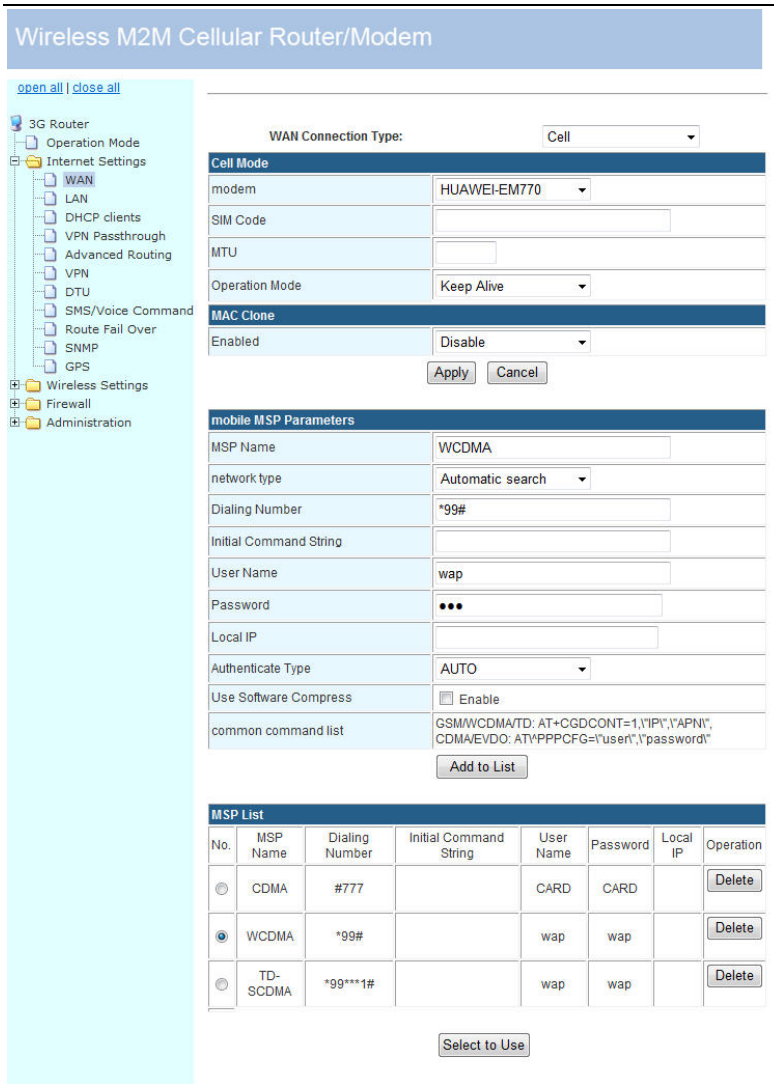
Checking Method: fill in a public IP address that can be ping through.

With the above configuration, the router will try to ping IP 74. 125.71.138 and if cannot be through for 3 times continuously, it will switch to secondary line.

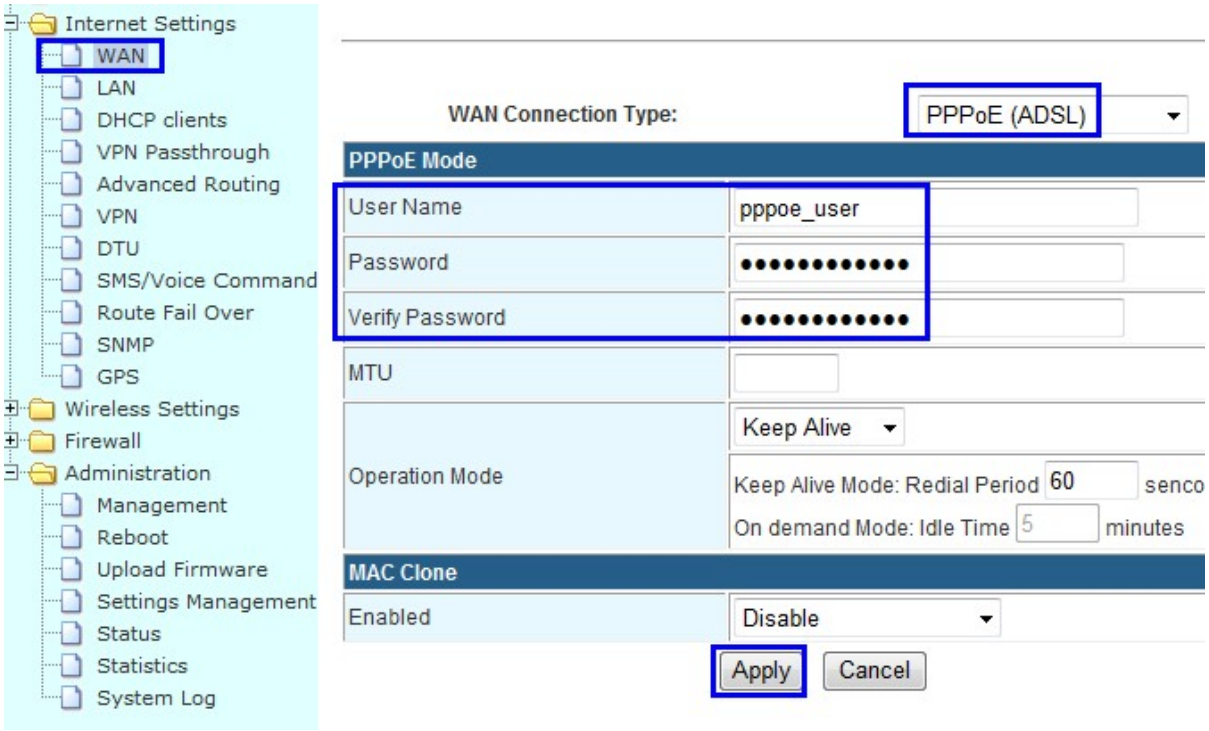
Step 3) Internet Settings – WAN – WAN Connection Type – Cell.

Configure the Cell WAN parameters.

Please make sure H820 can be Cell online after this configuration. Otherwise the fail over feature will not work in redundancy

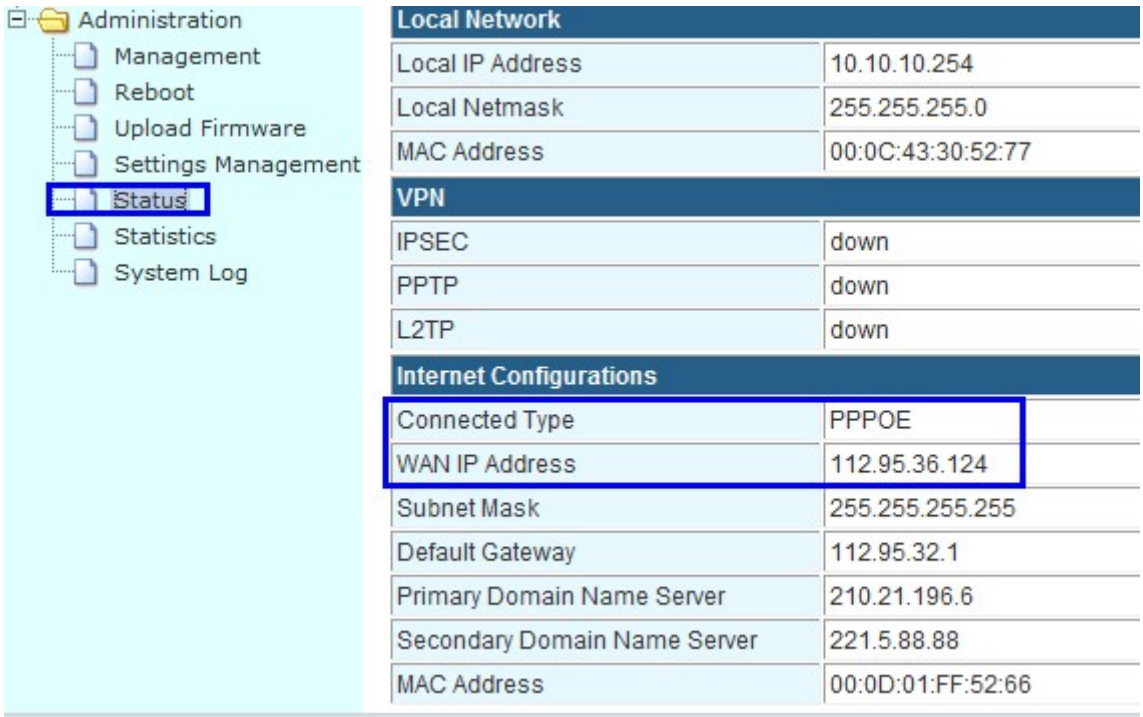


Step 4) Internet Settings – WAN – WAN Connection Type – PPPoE (ADSL)



Fill in the correct parameters for xDSL.
Notes: Do not forget to click “Apply” button.

Step 5) The H820 router will automatically reboot and try to connect the WAN RJ45 PPPoE as main line. If main line failed, it will switch to Cell as secondary line. And if WAN RJ45 PPPoE resume to work, it will switch from Cell line to WAN RJ45 PPPoE line.
The following page indicated the PPPoE is working.

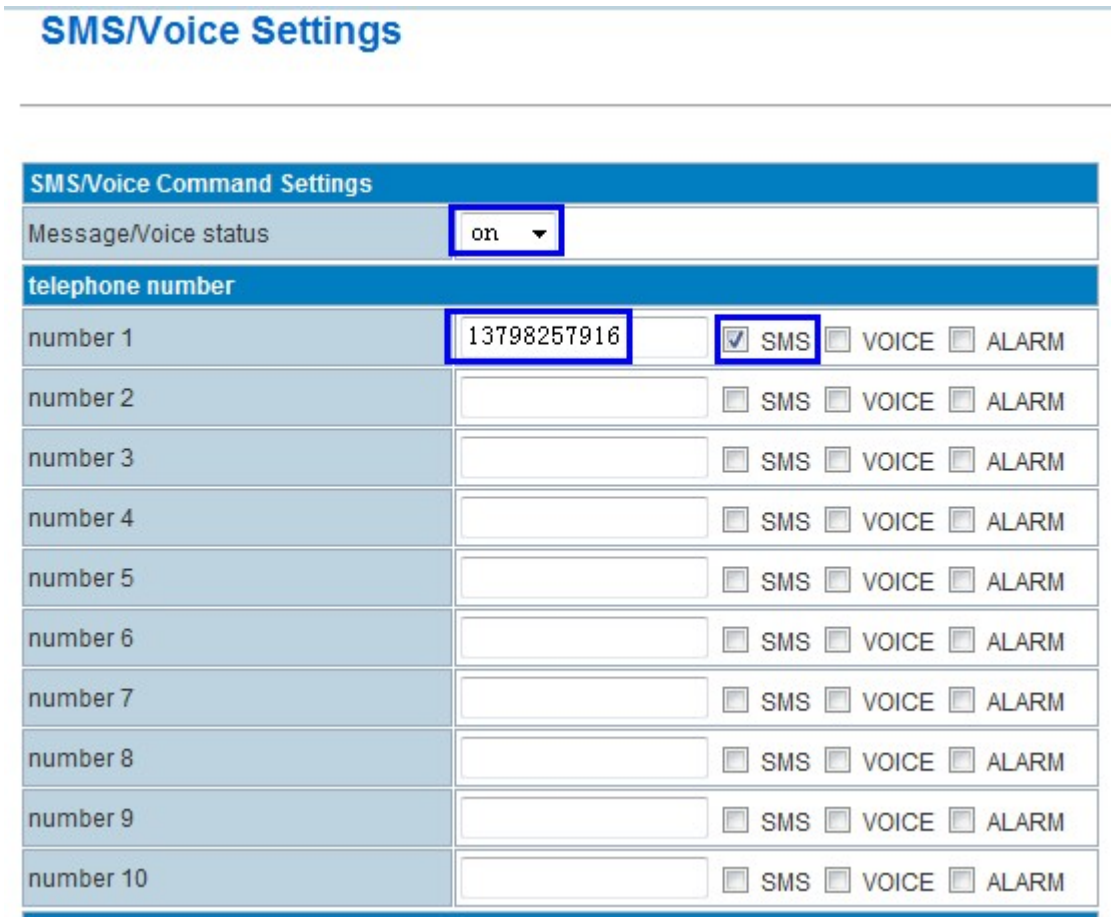


Once the PPPoE (ADSL) is failed, H820 will switch to cellular automatically as follows,

Internet Configurations	
Connected Type	Cell
WAN IP Address	172.20.5.78
Subnet Mask	255.255.255.255
Default Gateway	10.64.64.64
Primary Domain Name Server	210.21.196.6
Secondary Domain Name Server	221.5.88.88
MAC Address	6D:61:67:65:00:00

5.8 SMS Reboot/Cell UP/Cell Down control

Step 1) follow Chapter 3.3.9 to configure the SMS feature. We configure it as follows,



SMS	
SMS Command	on
Send ack SMS	on
Reboot Router Command	reboot
Get Cell Status Command	cellstatus
Cell link-up Command	cellup
Cell link-down Command	celldown
DIO_0 Set Command	dio01
DIO_0 Reset Command	dio00
DIO_1 Set Command	dio11
DIO_1 Reset Command	dio10
DIO Status Command	diostatus

Step 2) for EVDO version, please keep your UIM Card can get CDMA1x network also, otherwise the router cannot support SMS feature because SMS cannot work on EVDO network but on CDMA1x network.

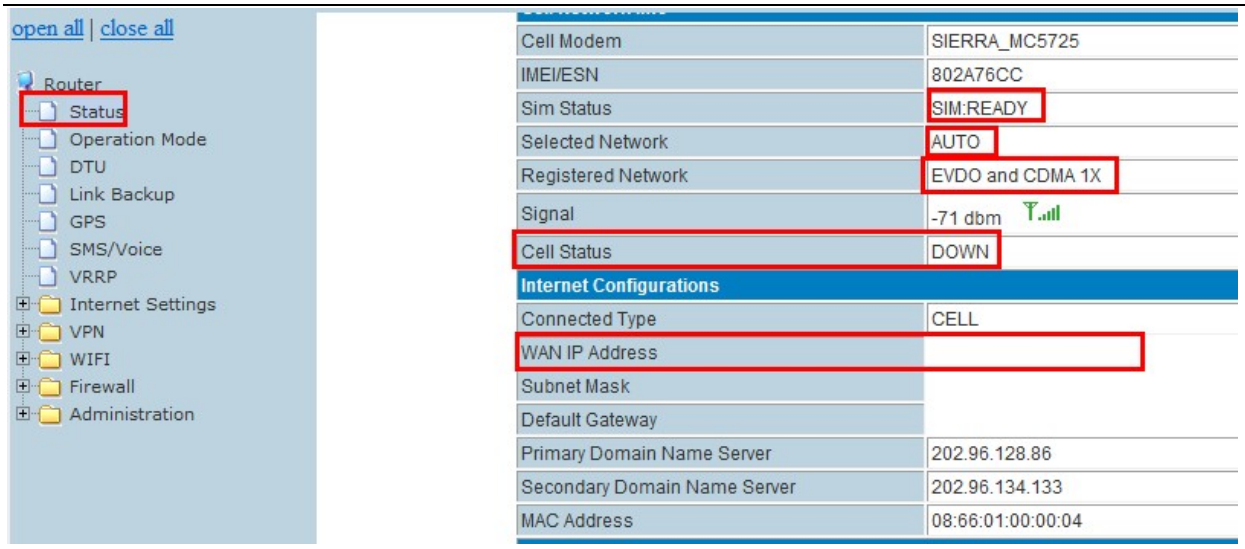
Cell Network Info	
Cell Modem	SIERRA_MC5725
IMEI/ESN	802A76CC
Sim Status	SIM:READY
Selected Network	AUTO
Registered Network	EVDO and CDMA 1X
Signal	-71 dbm
Cell Status	UP

For WCDMA/GSM/W-LTE, it has no limitation.

Step 3) CELL DOWN control test

Send “celldown” from send’s phone number (here is 13798257916). In the System Log of the router, you can find the similar info "received index=0 msg (celldown) from (13798257916) !"

The Router CELL will be offline, and WAN IP will be none as followed status.



Step 4) CELL UP control test

From sender's phone number 13798257916, send "cellup" to router sim/uim card number. At the router "System Log", there is info similar "received index=0 msg (cellup) from (13798257916) ". The router cell will dialup to be online.

System Info	
Series	H820
SN	086412090002
Software Version	2.2.0 (Sep 16 2012)
Hardware Version	1.0.0
System Up Time	1:10
Operation Mode	Gateway Mode
Cell Network Info	
Cell Modem	SIERRA_MC5725
IMEI/ESN	802A76CC
Sim Status	SIM:READY
Selected Network	AUTO
Registered Network	EVDO and CDMA 1X
Signal	-68 dbm
Cell Status	UP
Internet Configurations	
Connected Type	CELL
WAN IP Address	113.112.46.31
Subnet Mask	255.255.255.255
Default Gateway	113.112.0.1
Primary Domain Name Server	202.96.128.86

Step 5) CELL STATUS check test

From sender's phone number 13798257916, send "cellstatus" to router sim/uim card number. At the router "System Log", there is info similar " received index=0 msg (cellstatus) from (13798257916) !". The router will feedback the CELL STATUS to sender's phone number 13798257916. At 13798257916, we will get message of "Router

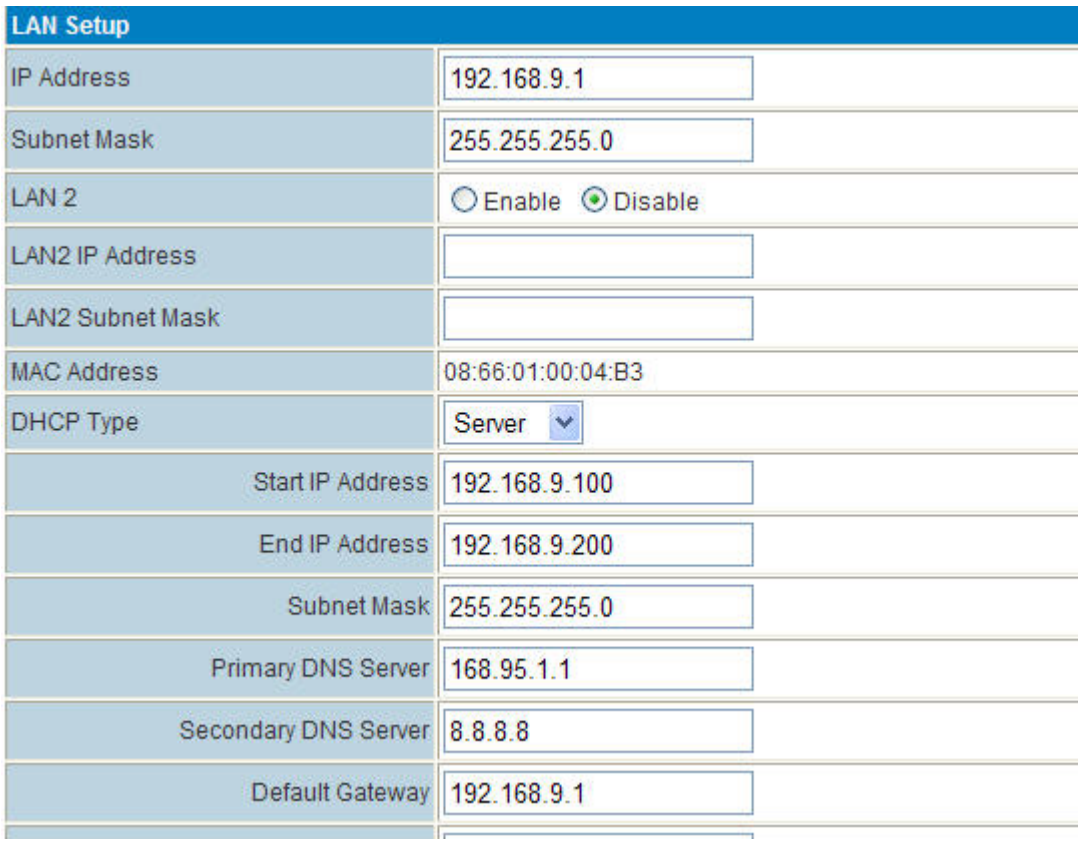
SN:086412090002 cell_link_up".

5.9 LAN IP modification

Change Router's LAN IP means changing its gateway IP.

Step 1) go to Router Web – Internet Settings – LAN

Step 2) modify the IP address



Step 3) modify the "Default Gateway" same as "IP Address", then click "Apply" button.

5.10 PPTP client connection

PPTP Server's Info:

PPTP Server IP: 190.54.34.131

Username: vpnuser

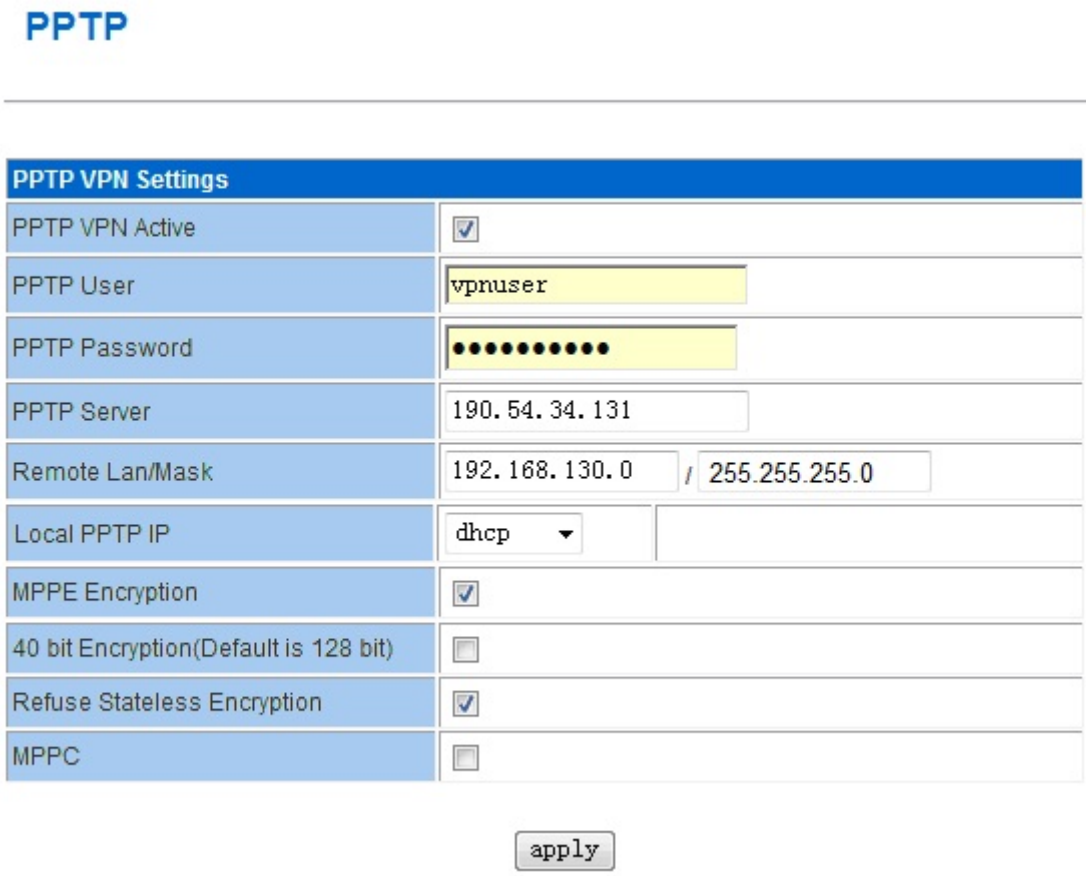
Password: tekrem9876

Remote LAN/Mask: 192.168.130.0/24

PPTP Server's Assigned Network: 192.168.8.0/24 (If your PPTP Server not Assigned H820 Router's IP network range, the PPTP can connect but cannot go data through. Also you can change H820 LAN IP into the PPTP server's assigned network such as 192.168.0.1 or 192.168.1.1, etc.)

Step 1) make the H820 router working online.

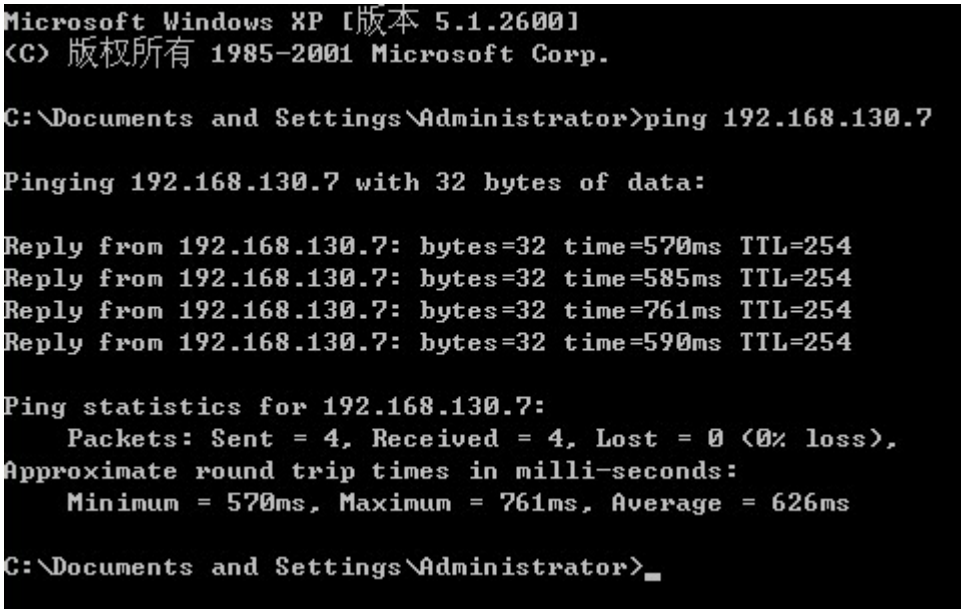
Step 2) Fill in the PPTP parameters as follows,



Step 3) check if the PPTP is connected.

Router Web – Status,

Step 4) Try to check if can be through with PPTP Server.

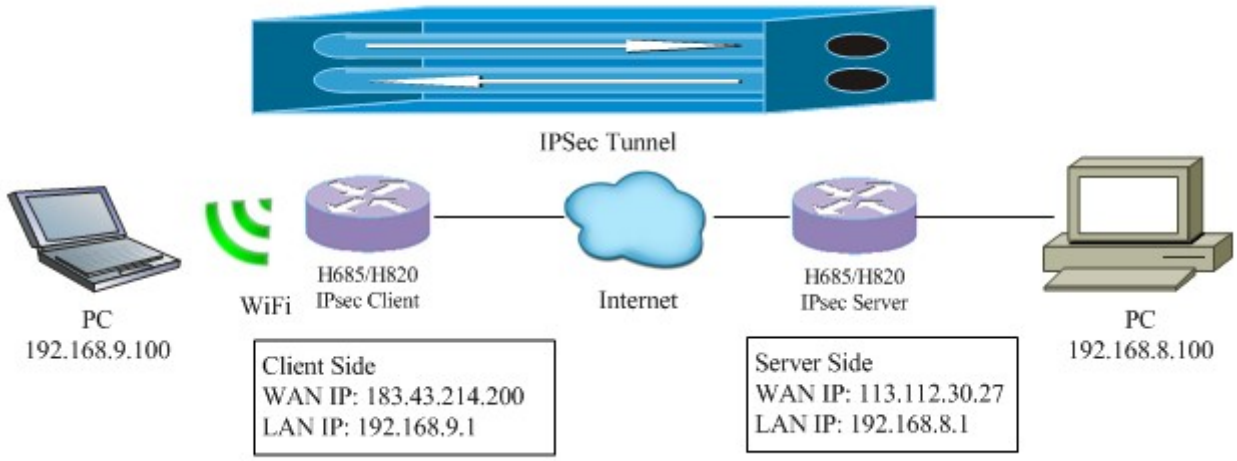

Microsoft Windows XP [版本 5.1.2600]
(C) 版权所有 1985-2001 Microsoft Corp.
C:\Documents and Settings\Administrator>ping 192.168.130.7
Pinging 192.168.130.7 with 32 bytes of data:
Reply from 192.168.130.7: bytes=32 time=570ms TTL=254
Reply from 192.168.130.7: bytes=32 time=585ms TTL=254
Reply from 192.168.130.7: bytes=32 time=761ms TTL=254
Reply from 192.168.130.7: bytes=32 time=590ms TTL=254
Ping statistics for 192.168.130.7:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 570ms, Maximum = 761ms, Average = 626ms
C:\Documents and Settings\Administrator>

Notes:
1) If the PPTP cannot through between client and server, please check if the MPPE configuration is matched with PPTP server or not.
2) Normally PPTP server has route for 192.168.1.1/24 or 192.168.0.1/24. Please check the PPTP server has the route of 192.168.8.0/24 if your H820 router is with IP 192.168.8.1.
For example, if H820 LAN IP is 192.168.8.1 and assigned PPTP IP is 172.1.1.2. Then at the PPTP server, need add a route for 192.168.8.0/24 and gateway as 172.168.1.2. Meanwhile, we suggest PPTP Server use fixed PPTP IP rule for PPTP client, otherwise need modify the route's gateway every time because the PPTP client gets a random PPTP IP.

5.11 IPSec sample

Preparation before test:

1) Take two H685/H820 router, one for IPSec Server, the other is for IPSec client. For formal application, recommend use CISCO VPN Router for Server, and E-Lins Router for Client.
2) We configure Server Router gateway LAN IP as 192.168.8.1, and Client Router gateway LAN IP as 192.168.9.1. Please refer to the manual chapter
3) Make Server Router and Client Router both online. Here we use Cell connection for both routers.
4) Sample topology is as follows,



IPSec Server Side

Step 1) make the Server Router working online.

SN	0864120901DD
Software Version	2.3.4 (Nov 16 2012)
Hardware Version	1.0.0
System Up Time	1:53
Operation Mode	Gateway Mode
Cell Network Info	
Cell Modem	HUAWEI-EM660
IMEI/ESN	+GSN:802a76cc
Sim Status	SIM ready
Selected Network	AUTO
Registered Network	Registered on Home network
Sub Network Type	CDMA 1X
Signal	31
Cell Status	UP
Internet Configurations	
Connected Type	CELL
WAN IP Address	113.112.30.27
Subnet Mask	255.255.255.255
Default Gateway	113.112.0.1
Primary Domain Name Server	202.96.128.86
Secondary Domain Name Server	202.96.134.133
MAC Address	08:66:01:00:04:BB

Step 2) Fill in the IPSec parameters as follows,

IPSEC	
Name (ID/FQDN)	saurabh
Service Mode	Service
Local Network Type	Subnet
Local IP	192.168.8.0 / 24
Remote Network Type	Subnet
Remote IP	192.168.9.0 / 24
Auth method	Pre Shared Key
Password	••••••
Interface	WAN
	Advance

And “Advance” as follows,

	Advance
NAT Traversal	☑
DPD Check	☑
DPD Interval (sec)	60
DPD Maximum Failures	3
Phase1	
Proposal Check	obey
Encryption Algorthm	3DES
Hash Algorthm	MD5
DH Groups	modp1024/2
Life Time (sec)	3600
Phase2	
Encryption Algorthm	3DES
Hash Algorthm	MD5
DH Groups	modp1024/2
Life Time (sec)	28800
Perfect Forward Secrecy	☑

Apply Reset

Click “Apply” button.

Step 3) Active the configured IPsec profile. Select the profile, click “Enable” button, then it will show “Active” at “Active Status”.

IPSEC List

Select	Name	Service Status	Gateway	Interface	Active Status	Link Status
☐	saurabh	service		WAN	Active	up

Add/Edit Delete Enable Disable
Restart all Refresh

IPSec Client Side

Step 1) make the Client Router working online.

SN	0864120901DA
Software Version	2.3.4 (Nov 16 2012)
Hardware Version	1.0.0
System Up Time	58 min
Operation Mode	Gateway Mode
Cell Network Info	
Cell Modem	SIERRA_MC5725
IMEI/ESN	8072CB8A
Sim Status	SIM:READY
Selected Network	AUTO
Registered Network	EVDO and CDMA 1X
Sub Network Type	EVDO and CDMA 1X
Signal	cdma -66 dbm evdo -68 dbm
Cell Status	UP
Internet Configurations	
Connected Type	CELL
WAN IP Address	183.43.214.200
Subnet Mask	255.255.255.255
Default Gateway	113.115.0.1
Primary Domain Name Server	202.96.128.86

Step 2) Fill in the IPSec parameters as follows,

IPSEC	
Name (ID/FQDN)	saurabh
Service Mode	Client
Exchange Mode	Aggressive
Gateway	113.112.30.27
Local Network Type	Subnet
Local IP	192.168.9.0 / 24
Remote Network Type	Subnet
Remote IP	192.168.8.0 / 24
Auth method	Pre Shared Key
Password	●●●●●●
Interface	WAN
	Advance

And “Advance” as follows,

	Advance
NAT Traversal	☑
DPD Check	☑
DPD Interval (sec)	60
DPD Maximum Failures	3
Phase1	
Proposal Check	obey
Encryption Algorithm	3DES
Hash Algorithm	MD5
DH Groups	modp1024/2
Life Time (sec)	3600
Phase2	
Encryption Algorithm	3DES
Hash Algorithm	MD5
DH Groups	modp1024/2
Life Time (sec)	28800
Perfect Forward Secrecy	☑

Apply Reset

Step 3) Active the configured IPsec profile. Select the profile, click “Enable” button, then it will show “Active” at “Active

Status".

IPSEC List						
Select	Name	Service Status	Gateway	Interface	Active Status	Link Status
☐	saurabh	client	113.112.30.27	WAN	Active	up

Add/Edit Delete Enable Disable
Restart all Refresh

After settings for Server Router and Client Router, the IPsec will start to connect automatically.
For Client Side, it will display the following status,

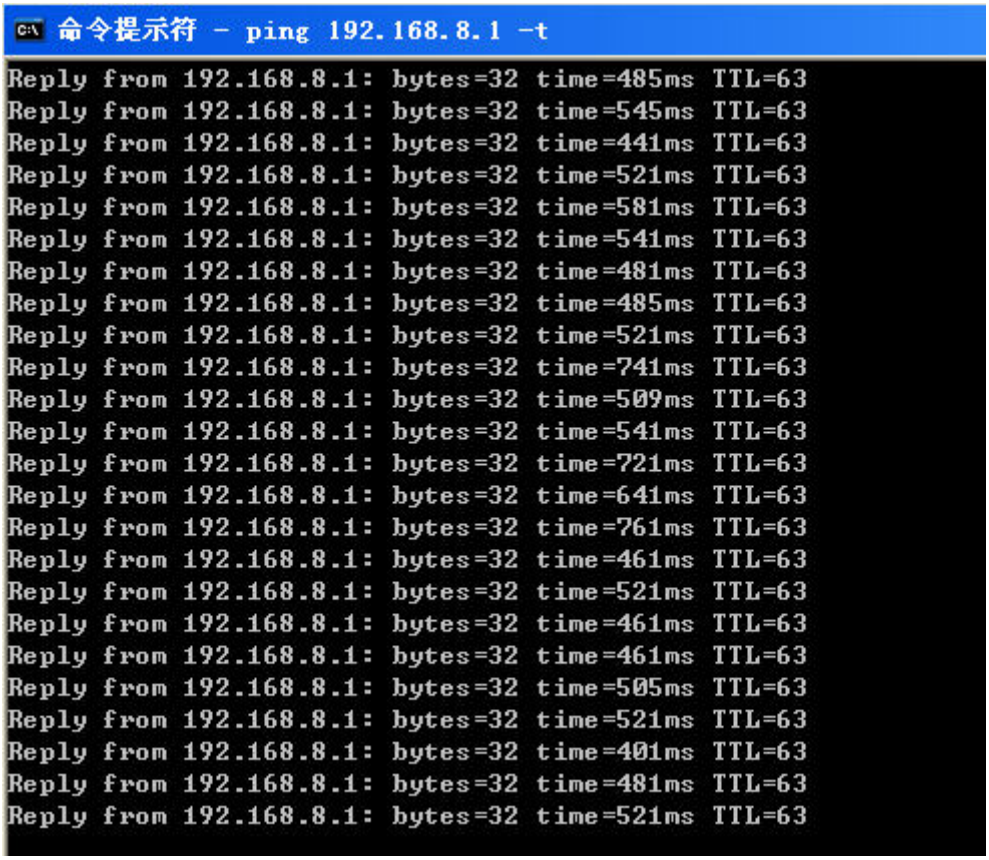
Local Network	
Local IP Address	192.168.9.1
Local Netmask	255.255.255.0
MAC Address	08:66:01:00:04:B3
IPSEC Status	
Name	Status
saurabh	Active: Active Link: up

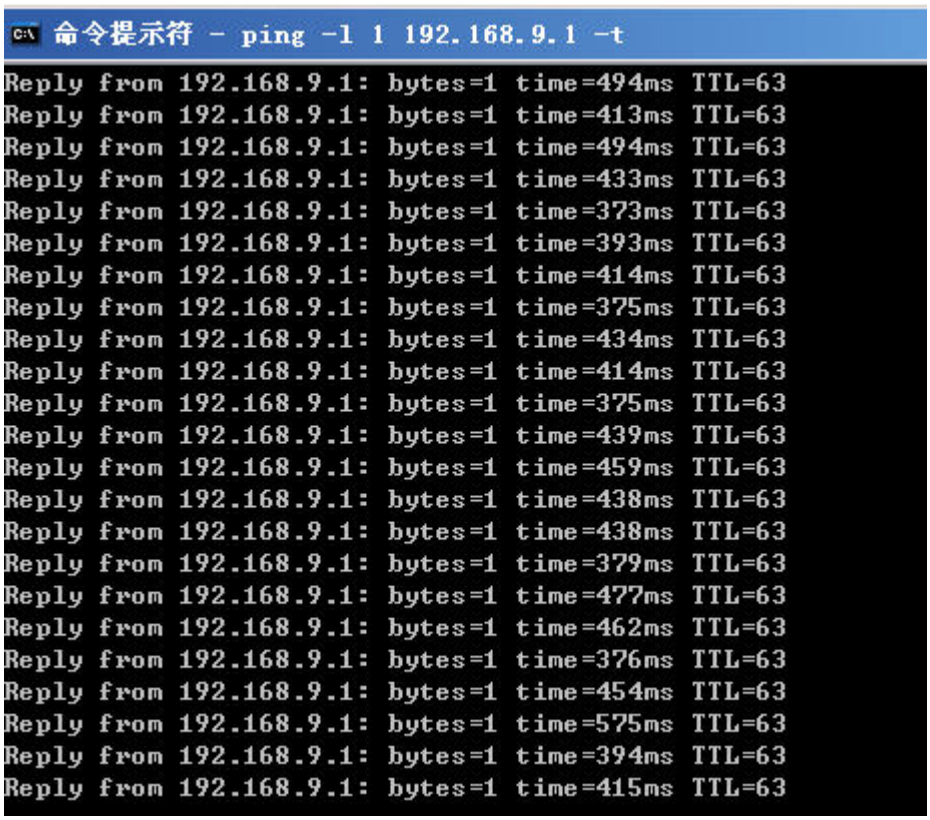
For Server Side, it will display the following satus,

Local Network	
Local IP Address	192.168.8.1
Local Netmask	255.255.255.0
MAC Address	08:66:01:00:04:BC
IPSEC Status	
Name	Status
saurabh	Active: Active Link: up
PPTP Status	
PPTP	down
PPTP IP	
L2TP Status	
L2TP	down
L2TP IP	

Test Result:

Try to ping from Client to Server, and from Server to Client. If both is through, means working.


命令提示符 - ping 192.168.8.1 -t
Reply from 192.168.8.1: bytes=32 time=485ms TTL=63
Reply from 192.168.8.1: bytes=32 time=545ms TTL=63
Reply from 192.168.8.1: bytes=32 time=441ms TTL=63
Reply from 192.168.8.1: bytes=32 time=521ms TTL=63
Reply from 192.168.8.1: bytes=32 time=581ms TTL=63
Reply from 192.168.8.1: bytes=32 time=541ms TTL=63
Reply from 192.168.8.1: bytes=32 time=481ms TTL=63
Reply from 192.168.8.1: bytes=32 time=485ms TTL=63
Reply from 192.168.8.1: bytes=32 time=521ms TTL=63
Reply from 192.168.8.1: bytes=32 time=741ms TTL=63
Reply from 192.168.8.1: bytes=32 time=509ms TTL=63
Reply from 192.168.8.1: bytes=32 time=541ms TTL=63
Reply from 192.168.8.1: bytes=32 time=721ms TTL=63
Reply from 192.168.8.1: bytes=32 time=641ms TTL=63
Reply from 192.168.8.1: bytes=32 time=761ms TTL=63
Reply from 192.168.8.1: bytes=32 time=461ms TTL=63
Reply from 192.168.8.1: bytes=32 time=521ms TTL=63
Reply from 192.168.8.1: bytes=32 time=461ms TTL=63
Reply from 192.168.8.1: bytes=32 time=461ms TTL=63
Reply from 192.168.8.1: bytes=32 time=505ms TTL=63
Reply from 192.168.8.1: bytes=32 time=521ms TTL=63
Reply from 192.168.8.1: bytes=32 time=401ms TTL=63
Reply from 192.168.8.1: bytes=32 time=481ms TTL=63
Reply from 192.168.8.1: bytes=32 time=521ms TTL=63


命令提示符 - ping -l 1 192.168.9.1 -t
Reply from 192.168.9.1: bytes=1 time=494ms TTL=63
Reply from 192.168.9.1: bytes=1 time=413ms TTL=63
Reply from 192.168.9.1: bytes=1 time=494ms TTL=63
Reply from 192.168.9.1: bytes=1 time=433ms TTL=63
Reply from 192.168.9.1: bytes=1 time=373ms TTL=63
Reply from 192.168.9.1: bytes=1 time=393ms TTL=63
Reply from 192.168.9.1: bytes=1 time=414ms TTL=63
Reply from 192.168.9.1: bytes=1 time=375ms TTL=63
Reply from 192.168.9.1: bytes=1 time=434ms TTL=63
Reply from 192.168.9.1: bytes=1 time=414ms TTL=63
Reply from 192.168.9.1: bytes=1 time=375ms TTL=63
Reply from 192.168.9.1: bytes=1 time=439ms TTL=63
Reply from 192.168.9.1: bytes=1 time=459ms TTL=63
Reply from 192.168.9.1: bytes=1 time=438ms TTL=63
Reply from 192.168.9.1: bytes=1 time=438ms TTL=63
Reply from 192.168.9.1: bytes=1 time=379ms TTL=63
Reply from 192.168.9.1: bytes=1 time=477ms TTL=63
Reply from 192.168.9.1: bytes=1 time=462ms TTL=63
Reply from 192.168.9.1: bytes=1 time=376ms TTL=63
Reply from 192.168.9.1: bytes=1 time=454ms TTL=63
Reply from 192.168.9.1: bytes=1 time=575ms TTL=63
Reply from 192.168.9.1: bytes=1 time=394ms TTL=63
Reply from 192.168.9.1: bytes=1 time=415ms TTL=63